

Comment Response Document Regarding the Total Maximum Daily Loads of Nitrogen and Phosphorus for the Baltimore Harbor in Anne Arundel, Baltimore, Carroll and Howard Counties and Baltimore City, Maryland

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed Total Maximum Daily Loads (TMDLs) of Nitrogen and Phosphorus for the Baltimore Harbor. The public comment period was open from June 6, 2006 through July 5, 2006. MDE received five 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
Michael P. Bonk	Anne Arundel County, Department of Public Works	July 3, 2006	1 through 11
Steven Stewart	Baltimore County, Watershed Management and Monitoring	July 5, 2006	12 through 14
Mary Searing	Anne Arundel County, Office of Environmental and Cultural Resources	July 5, 2006	15 through 25
Kim Coble, Beth McGee	Chesapeake Bay Foundation	July 6, 2006	26 through 30
Michael P. Bonk	Anne Arundel County, Department of Public Works	July 6, 2006	31
Kim Coble	Chesapeake Bay Foundation	Sept. 21, 2006	Appendix A

Comments and Responses

1. The commentor states that the point source data used for the baseline modeling appears somewhat dated, 1992-1997; this data is as much as 10 years old. The commentor continues that much improvement in point source nutrient reductions has occurred.

Response: MDE is aware that significant improvements in point source loads reductions have occurred since 1997. A TMDL, which by definition is the assimilative capacity of an impairing substance that a waterbody can receive and still meet water quality standards, is independent of the baseline loads. The monitoring data is necessary for the calibration of the model and to estimate percent reductions but will not affect the assimilative capacity of the waterbody. The modeling efforts started in 1998; the Department used the best data that was readily available at that time.

2. The commentor references page 35, Section 5: MDE states that the Enhanced Nutrient Reduction (ENR) program provides cost-share grant funds to local governments to retrofit or upgrade Wastewater Treatment Plants (WWTPs).... The commentor states that the "flush

tax” was incorporated at the added burden of the local governments to pay for these upgrades and asks what happened to paying 100% of eligible ENR costs?

Response: There was a typographical error in this portion of the paragraph. This error has been corrected and this portion of the paragraph now states: “The Enhanced Nutrient Reduction (ENR) program provides grant funds to local governments to retrofit or upgrade Wastewater Treatment Plants (WWTPs) from BNR to ENR at their currently approved design capacity.”

3. The commentor references page 35, Section 5: MDE states that upon completion of the ENR upgrades, subsequent National Pollution Discharge Elimination System (NPDES) permits for the municipal WWTPs will include nutrient limits. The commentor asks how is MDE going to handle if current permits expire prior to completion of ENR upgrades. The commentor also asks if the TMDL will take effect before it is determined whether loading limits can be achieved.

Response: Performance standards and a schedule for implementing ENR upgrades are typically set forth in an ENR agreement with the affected jurisdiction. Schedules and performance standards are established with consideration to, among other things, the waste stream received by the facility, the complexity of the engineering involved, and the availability of State and local resources. The ENR schedule, which in isolated cases may need to exceed the maximum five-year term of an NPDES permit, and performance standards will be referenced in any applicable NPDES permit. Effluent limits based upon operation of ENR technology will become effective following completion and start-up of ENR upgrades.

4. The commentor references page 35, Section 5; the last paragraph states: “The implementation of nonpoint source nutrient controls that will attempt to meet the water quality standards in the Harbor....” The commentor states that this sounds half-hearted and again sounds as if point source controls are taking the brunt of the Chesapeake Bay clean up. The commentor asks what assurances do the point sources have that MDE will push the nonpoint source community and in what kind of timeframe.

Response: Please refer to the Assurance of Implementation Section of the TMDL report. This section has been updated and presents several initiatives and programs that provide reasonable assurance that the TMDL NPS load allocations can and will be implemented in order to achieve water quality standards. For example, reductions can be achieved through: stormwater NPDES permits; the upgrade of sanitary sewer systems and the upgrade or separation of combined sewer systems; cooperative agricultural reductions such as Maryland’s Water Quality Improvement Act that requires that comprehensive and enforceable nutrient management plans be developed, approved and implemented for all agricultural lands throughout Maryland; and Watershed Restoration Action Strategies (WRAS). The timeframe for implementation of these and other programs are specific for each. Maryland’s Tributary Strategies implementation plan is still under development but previous draft plans require that reductions be implemented by 2010.

5. The commentor references the Point Source Technical Memorandum. The commentor states that if the County has interpreted the tables in this memorandum correctly, Tables 1a, 1b, 2a, 2b show the industrial point source has not been required to keep up with nutrient removal technology via permit limits as have municipal plants. Table 1a shows International Steel Group (ISG)-101, a “major” industrial at 0.86 mgd flow, is allowed a TN concentration of 49 mg/l; WR Grace, listed as a flow of 4.0 mgd, is allowed a TN concentration of 25 mg/l. The commentor states that these limits appear to be quite high. The commentor states there are some dischargers not even listed. The commentor asks why aren’t private entities held to the same standard.

Response: The only economical option for reducing nutrient loadings at Publicly-Owned Treatment Works (POTWs) is through end of pipe treatment. Other options for significant loading reductions are available at industrial sources. The ability to implement pollution prevention, wastewater-reuse, production line changes, and product changes renders effluent concentration levels as a misleading measure of progress for such facilities. Both of the referenced industrial facilities have achieved significant reductions in nutrient loadings. W.R. Grace continues to implement process and product revisions to continue to achieve further reductions in nutrient loadings. The Department considered an additional treatment requirements at ISG-101 that will be reflected in the current pending NPDES permit renewal process and have resulted in a TN reduction in that outfall from 49 mg/l to 24 mg/l.

6. Noting that the report references an annual average concentration of 4 mg/l as a limit for the municipal point sources, the Commentor asks, in light of the recent D.C. Circuit decision interpreting “daily” to require daily loads to be identified in all instances, how MDE is planning to handle setting “daily” limits/loads? By only setting the two seasonal limits of 3 mg/l and 5 mg/l? The commentor states that if this is so, then the growing season limit of 3 mg/l will not allow for any operational flexibility within the plant since 3 mg/l is the absolute limit of technology. The commentor states that the difference between loading based on 4mg/l and 3 mg/l was considered to be growth.

Response: The Department does not anticipate any significant change in plans to apply two seasonal limits in the discharge permit that will be required to implement the TMDL.

7. The commentor asks whether MDE will allow for offsets/credits for a facility if final effluent goes to an alternate source for reuse. If so, the Commentor asks whether an implementation plan been considered? Finally, the Commentor asks for an example of how credits maybe formulated.

Response: The Department is examining a number of potential options regarding offsets/credits, and is receiving comments and suggestions from a variety of stakeholders regarding this concept. MDE invites the commentor or any other agency or group to provide comments or suggestions regarding how a trading/offsets approach would best be implemented in Maryland.

8. The commentor states that Anne Arundel (AA) County is currently negotiating a Memorandum of Understanding (MOU) for a “nutrient bubble” permit to include all of our

WWTPs that discharge to the Bay. If a TMDL for total nitrogen (TN) and total phosphorus (TP) is set, how does MDE anticipate AA County to include a facility strapped with a TMDL? The MOU allows for loadings flexibility between plants. It appears that a plant with TMDL concentration limits will not have much flexibility. The TMDL plant will not have the flexibility to “trade” loadings with other facilities as specified in the draft MOU.

Response: In general, the purpose of the MOU is to provide flexibility in meeting the Bay loading cap requirements. The TMDL for the Baltimore Harbor does not contradict the approach being negotiated in the MOU. MDE has been clear that any more stringent local TMDL requirements may apply in addition to any requirements for meeting water quality standards.

9. The commentor states that their current permit specifies a monitoring schedule of 2 times per month for TN. If daily means daily, should AA County anticipate an increase of monitoring to daily? If so, this will be adding additional cost and burden on the County for very little benefit.

Response: MDE does not anticipate that daily monitoring will be required.

10. The commentor expresses difficulty understanding why a nutrient TMDL within the Inner Harbor is being established at this point in time (*i.e.*, pre-ENR upgrades) while at the same time MDE’s permitting division is working on issuing “bubble permits” to allow “internal trading.” The commentor’s understanding was that a TMDL would be issued only as a last resort. The commentor’s feeling is that if a nutrient TMDL is set at this point in time, MDE is not giving ENR enhancements a chance and will be limiting growth and flexibility in the area.

Response: As explained in the response to comment #8, MDE has always been clear that any more stringent local TMDL requirements may apply in addition to any requirements for meeting Chesapeake Bay water quality standards. The TMDL requirements for the Baltimore Harbor still allows for issuance of a “bubble” (or watershed) permit that addresses Chesapeake Bay nutrient caps.

11. The commentor states that a portion of the urban nutrient load is due to sanitary sewer leakage. Reduction of nitrogen and phosphorus through repair of the sanitary sewer system was estimated to be ~ 10% of the urban load by the Gwynns Falls Water Quality Management Plan. The commentor continues that the Plan is available through MDE's Water Management Administration (WMA)- Stormwater Program.

Response: The TMDL Program has been working closely with WMA’s Stormwater Program and is aware that broken sanitary pipes laid in the streambed are a major source of nutrients, due to wastewater exfiltrating into the stream. One of the most significant planned implementation measures requires the jurisdictions within the watershed to evaluate their sanitary sewer systems and to repair, replace, or rehabilitate the system as indicated by the results of those evaluations (*i.e.*, the separation of combined sewer systems in Baltimore City and the elimination of sanitary sewer overflows in Baltimore City and Baltimore County).

12. The commentor, referencing Section 5.0 Assurance of Implementation, states that the WRAS being developed in Howard County is mentioned, but the watershed planning efforts of Baltimore County and Baltimore City are not acknowledged. Baltimore County has Watershed Management Plans for the County portion of Jones Falls and the Patapsco River watersheds. Baltimore County has a Watershed Management Plan for Gwynns Falls developed jointly with Baltimore City. These plans identify and prioritize Capital Program restoration projects for improvement of water quality.

Response: MDE acknowledges the planning efforts made by the County and the City and will incorporate information regarding those efforts in the TMDL Assurance of Implementation Section.

13. The commentor, referencing the Assurance of Implementation section, states that the section does not acknowledge the fact that local jurisdictions have already implemented many restoration projects that have resulted in the reduction of nitrogen and phosphorus and have additional projects in the design phase. Within the three watersheds (Patapsco River, Gwynns Falls, and Jones Falls) Baltimore County has already expended or budgeted in excess of \$12 million. These efforts are detailed in the annual Baltimore County NPDES - Municipal Stormwater Discharge Permit report, available through MDE's Water Management Administration - Stormwater Program.

Response: MDE acknowledges the investment made by Baltimore County, and as such additional information will be incorporated into the Assurance of Implementation Section.

14. The commentor states that both Baltimore County and Baltimore City are under Consent Decrees to repair their respective sanitary sewer systems. The commentor continues that the nutrient reduction that can be achieved through these repairs should be acknowledged under the Assurances of Implementation.

Response: Language referring to the above-mentioned consent decrees will be added in the Assurance of Implementation Section. Please also see the response to comment #12.

15. The commentor states that Anne Arundel County has developed a Countywide landcover and impervious cover dataset. It was developed using 1-meter true color (RGB) and color infrared (NIR) 11-bit orthorectified IKONOS imagery captured in May of 2004. Plans are underway to update this dataset with information from 2006. The commentor requests that MDE please contact the commentor, should MDE be interested in this data for this draft TMDL or for other purposes.

Response: MDE appreciates Anne Arundel County's invitation and will contact the County staff for future TMDL projects involving land cover data in the county.

16. The commentor states that Anne Arundel (AA) County has developed and is using a Watershed Management Tool (WMT) to assist in the County's NPDES Municipal Separate Storm Sewer System (MS4) permit requirements as well as TMDLs. The commentor

continues that this tool consists of several water quality, hydrology, and hydraulic models. It is the commentor's belief that these models can be used to assist in the development of TMDL Implementation Plans. The commentor maintains that using the WMT, a variety of various management alternatives can be evaluated to determine if a numeric goal can be met through the implementation of the alternatives. The commentor would like to request a meeting with key staff at MDE to review the WMT and how the County proposes to use it to assist us in meeting our TMDLs.

Response: MDE appreciates Anne Arundel County invitation and will contact the County staff for future TMDL implementation projects in the county.

17. The commentor states that WMT is currently being used to prioritize all of the subwatersheds in the County as to each subwatershed's need for watershed restoration. This tool, similar to the Howard County WRAS (mentioned on page 36 of the draft report), will be able to assist in "identifying and prioritizing watershed restoration efforts, which will include the reduction of nutrient loads from the watershed."

Response: Please see response to comment 16.

18. The commentor states that it appears the Future Conditions (TMDL) Scenario indicates that the designated uses (except deep channel) can be met using the strategy set forth in requiring reductions from wastewater treatment plants, industrial point sources, and 15% reduction in both agricultural and urban loads. As the commentor understands it, the scenario does not account for possible reductions due to septic system upgrades or septic connections, or in reductions from recreational vehicles. The commentor asks whether the County can receive credit toward the Baltimore Harbor Nutrient TMDL for reductions in loads due to the implementation of these practices.

Response: In principle, the County can receive credit toward achieving the Baltimore Harbor Nutrient TMDL NPS reductions from any practices that are scientifically justified. It should be noted that credit being sought to offset increases in point source discharges beyond existing allocations would need to be justified through a formal permitting process. MDE is in the process of developing an offset and trading policy.

19. The commentor stated that nutrient load reductions from wildlife and pet waste management practices are not mentioned in the subject draft TMDL. Because AA County has several bacteria TMDLs, and the TMDLs indicate the bacteria loads are primarily due to pets and wildlife, the commentor asks would practices that address the bacteria TMDLs also be able to be used to address the nutrient TMDLs? Implementing particular practices, such as a reduction in pet waste, would be beneficial in reducing bacteria as well as in reducing nutrients. It would seem that practices that address several different types of TMDLs would make the most of the limited resources local jurisdictions have to address TMDLs.

Response: Though not directly linked, it is assumed that the bacteria management plans, such as pet waste management and sanitary sewer infrastructure restoration, will have a significant impact in nutrients loads reductions. In reference to wildlife management,

although it is not mentioned in the Baltimore Harbor Nutrients TMDLs, the bacteria TMDLs state the following:

“It is expected that in some waters for which TMDLs will be developed, the bacteria source analysis indicates that after controls are in place for all anthropogenic sources, the waterbody will not meet water quality standards. However, while neither Maryland, nor EPA is proposing the elimination of wildlife to allow for the attainment of water quality standards, managing the overpopulation of wildlife remains an option for state and local stakeholders. After developing and implementing to the maximum extent possible a reduction goal based on the anthropogenic sources identified in the TMDL, Maryland anticipates that implementation to reduce the controllable nonpoint sources may also reduce some wildlife inputs to the waters.”

20. The commentor states that a significant amount of the Baltimore Harbor subwatershed area [Other nonpoint source (NPS) Loads], approximately 29%, is not slated for nutrient reductions. The commentor asks are local jurisdictions permitted to receive credit for reductions in loads due to best management practices (BMPs) that might be applied to these areas?

Response: Part of these “Other NPS Loads” are nutrient loads from non-controllable sources such as forested land. Local jurisdictions will be acknowledged and credited for reductions in loads due to best management practices (BMPs) that might be applied to these or any other areas. See also response to comment 18.

21. The commentor asks how will the various counties that drain to the Baltimore Harbor know if they have met their part of the load reductions necessary for the TMDL?

Response: This question will be addressed as part of an iterative implementation planning process. The Department envisions will involve periodic assessment of progress toward reaching TMDL goals and the effectiveness of particular programs and practices. To this end, the State is urging local governments to participate in the Tributary Strategy Implementation Plan development process for Maryland's ten major basins that drain to Chesapeake Bay. This initiative, although presently focused on meeting nutrients goals in the Bay, is likely to be integral to the implementation planning process for tributary nutrient TMDLs.

22. The commentor states AA County, consisting of 46,223 acres within the 268,671 Baltimore Harbor Subwatershed¹, or 17.2%, has a potential urban stormwater point source allocation of 18%² of the nutrients nitrogen and phosphorus. The commentor asks why is there a difference in the amount of the load allocation as compared to the land acres within the subwatershed?

¹ From Table 1 (page 4) of Draft TMDL report

² Calculated from May 15, 2006 Technical Memorandum entitled *Significant Nutrient Point Sources in the Baltimore Harbor Watershed* Tables 1b and 2b.

Response: The urban stormwater point source allocation of 18% was estimated based on the percentage of URBAN area in the county relative to the TOTAL URBAN AREA in the watershed, not to the TOTAL AREA.

23. The commentor, referencing Table 1 of the Draft TMDL report and the appendix entitled *Baltimore Harbor Nutrients TMDLs Appendix C: Potential TMDL Allocations by Source Category*, states that Table 1 indicates AA County has 46,223 acres within the Baltimore Harbor Subwatershed, or 17% of the land area while the appendix indicates on page C2 that AA County has 18% of the land in the watershed. The commentor asks why is there a discrepancy in the amount of land in the watershed? The commentors continue that the other jurisdictions shown in Table 1 also have differing percentages of land area than that stated on C2 as follows:

Jurisdiction	Area (% from Table 1)	Area (% from C2)
AA	17.2	18
Baltimore City	15.1	25
Baltimore	37.4	41
Carroll	15.0	7
Howard	15.3	9
Total	100	100

Response: The percentages in Table 1 are based on total areas. The percentages in Table C2 are based on URBAN areas only. Please also see the response to Comment 22.

24. The commentor states that the loads from point sources and urban/stormwater sources are distributed to local jurisdictions in Appendix C of the Draft report but the nonpoint source loads are not distributed. The commentor asks how are the nonpoint source loads to be distributed to the local jurisdictions? The commentor also asks how does MDE plan to determine if each of the local jurisdictions is meeting their part of the nonpoint source load reduction?

Response: Nonpoint sources loads (agricultural and forest loads) by jurisdiction have been added to the NPS Technical Memorandum. For the second comment, please refer to the response to Comment 21.

25. The commentor asks how is future growth taken into account in the allocations?

Response: The TMDL analysis has been revised to include a future allocation for nitrogen. In addition to this explicit future allocation for nitrogen, future growth is implicitly accounted for in the Harbor TMDL. When developing a TMDL, MDE accounts for pollutant inputs from all sources, including discharges from industrial plants and sewage treatment facilities, from urban areas, and natural sources as stated in the report. One way to account for future growth in the TMDL is by using the maximum flow design capacity of the wastewater treatment facilities. Also, any future growth in the watershed is likely to occur in the remaining land that can still be developed within the watershed and this land is limited. It is expected that any future growth is likely to happen by converting some of the remaining

agricultural, which in some areas such as Baltimore City accounts only for only a minimum percentage of the total land, into commercial and residential land uses. It is not expected that forest land would be developed. In addition, the TMDLs per se – as required under the Clean Water Act - are irrespective of changes in land use or loadings. A TMDL is the assimilative capacity of the waterbody. Please also see the response to Comment 31.

26. The commentors state they are shocked and surprised to find that the total annual nitrogen load allocations in the proposed TMDL are approximately 50% higher than what was presented at the last meeting of the MDE's Baltimore Harbor TMDL Stakeholder Advisory Group (SAG) in December 2003. The commentors continue that this disconnect represents a total disregard for the efforts of the many stakeholders that participated in the SAG, not to mention a complete lack of transparency in the decision making process. The commentors state that no explanation is given in the proposed TMDL for the large changes between the December 2003 SAG TMDL (SAG TMDL) and the proposed TMDL made available for public review (proposed TMDL).

Response: At the December 2003 SAG meeting, in the interest of maximizing informed discussion, MDE presented some initial analysis and figures, not a proposal. Numbers projected before the completion of the analysis changed as the analysis was completed. A TMDL is an objective process based on complex models and monitoring data and changes can occur throughout the last part of the development period.

27. The commentors note that the majority of the increase from the SAG TMDL to the proposed TMDL can be attributed to differences in the total nitrogen for industrial point sources in Baltimore Harbor. The commentors continue that the SAG TMDL allocated an annual load of approximately 1.1 million pounds of nitrogen while in the proposed TMDL, the industrial point source allocation is nearly double that, approximately 2.1 million pounds of nitrogen annually. The commentor ends by stating that the remainder of the overall 1.7 million pound increase is due to higher allocations to nonpoint sources, both agricultural and urban stormwater.

Response: Please also see the response to Comment 26. In addition, the following are bases for differences from the preliminary informal estimates:

- The calibration of the model was not final at the time initial projections were discussed with the SAG; it was preliminary data and analysis.
- Estimates of TMDL loads were based on the average of the last 3 of the 6 years the model scenario was run, as opposed to the December 2003 preliminary estimate that was based on all 6 years of the model run. The last 3 years were used because significant WQ improvement occurs in the first 3 years of the model run and it is more accurate to calculate the TMDL without including these first years of the model run.
- Industrial loads were revised after the December 2003 presentation, and part of the increase is due to 0.462 million pounds of nitrogen (0.007 million pounds of phosphorus) estimated for the Cox Creek Dredge Material Containment Facility that was not included in the original projections.

- The new water quality standards were not promulgated when the presentation was made.
- The majority of the remainder difference is due to the revision of Industrial Facilities allocations. The December 2003 estimates were based on Chesapeake Bay Program (CBP) Tier III allocations that made untenable assumptions by applying municipal wastewater facilities reduction capabilities to industrial processes. The current estimate uses the same assumptions as Tributary Strategies.

28. The commentors state that the proposed TMDL is also inconsistent with the State's commitment to Chesapeake Bay Restoration by allowing the discharge of approximately 1.7 million pounds more nitrogen into Baltimore Harbor than is called for in the State's Patapsco/Back River Tributary Strategy. The commentors state that the proposed TMDL is also inconsistent with nitrogen load allocations necessary to protect water quality in the (Chesapeake) Bay. The commentors reference the February 2006 draft of Maryland's Chesapeake Bay Tributary Strategy State Implementation Plan stating that in the Plan, the load cap for the Patapsco/Back River Tributary is listed as 5.93 million pounds of nitrogen per year. The commentors compare this number with allocations in the proposed TMDL added to the number in the Back River TMDL, stating this results in 7.1 million pounds annually. The commentors continue that they recognize that a TMDL that is protective of local water quality will not necessarily protect bay water quality – hence a more stringent load may be required. The commentors recommend that MDE should capitalize on this opportunity to further the State's commitments to Bay restoration by harmonizing the different load allocations, particularly with respect to reducing pollution loads from point sources.

Response: The Department's analysis indicates that water quality will be met in Baltimore Harbor (with the exception of the Deep Channel because of the channel hydrology modifications, not due to nutrient loadings). The Department agrees with the commentor's premise that downstream water quality standards must be protected and that dischargers should be required to meet the most stringent of any applicable requirements. However because point sources are specifically regulated under discharge permits issued by the State, the appropriate vehicle to achieve the requested "harmonization" will be through effluent limitations applied in the individual discharge permits which must be protective of all local and downstream water quality standards and TMDLs. In addition, the issue of whether the maximum amount of pollution reduction should be required as part of the local TMDL because of downstream concerns (Bay water quality) will need to be addressed by the Bay Water Quality Model and the Bay TMDL. If, as a result of the Bay TMDL, additional reductions will be required, the more stringent of the two (local and the Bay) allocations will apply.

29. The commentors are very concerned that the method used to assess attainment of the dissolved oxygen (DO) criteria in the Open Water Designated Use area is flawed. The commentors reference page B4, "the analysis indicates that the attainment curve rises above the reference curve slightly, the time and volume represented by this area is <1% in time and volume. This results in the designated use meeting its criteria with 0% attainment." The commentors are adamantly opposed to the implementation of criteria in this fashion. The

commentors continue that the reference curve allows for some exceedances of the water quality criteria. The purpose of the reference curve is to represent the spatial and temporal distribution of DO concentrations in areas supporting healthy communities. The commentors maintain that exceedances beyond those “allowed” by the reference curve, however, mean that the criterion is not being attained. The commentors state that the load allocations for nitrogen and phosphorus should have been reduced in the TMDL until the entire attainment curve fell below the reference curve.

Response: As explained in the TMDL report, the DO criteria attainment assessment for Baltimore Harbor was performed using the Chesapeake Bay Program Reference Curve program. The output of this program provides percent attainment and percent non-attainment with these percentages results rounded to two decimal places. For the Open Water designated use (from October 1 to January 31) the output of the program shows the following for attainment of DO criteria in the above mentioned designated use: 0.93 attainment, 0.07 allowable exceedance, and 0.00 non-attainment (equivalent to 93% attainment, 7% allowable exceedance, and 0% non-attainment).

Based on these results, the percent non-attainment for this designated use is 0%. If the results of the Reference Curve Program were to be output with numbers rounded to three decimal points, MDE estimates that this percent of non-attainment should be somewhere between 0.000 and 0.005 (0.0% and 0.5%). Thus, the statement provided in the Appendix B of the Draft TMDL document will be modified to read as follows:

“A visual analysis of the reference curve plot indicates that the attainment curve rises slightly above the reference curve. The numerical values obtained from the output of the attainment program shows a 0.00 or 0% non-attainment. Therefore, it is estimated that the DO exceedance in time and volume time represented by this area should be between 0.000 and 0.005 (between 0.0% and 0.5%) in time and volume, otherwise if higher than 0.005, the numerical value of the program output would approximate to the next decimal showing a 0.01 or 1% exceedance. Based on the review of the reference curve program model output, MDE concludes that this specific designated use meets its DO criteria.”

30. The Commentors request MDE to re-convene the SAG, which the Commentor states “for unknown reasons, the stakeholder process came to a grinding halt after December 2003”. The commentors recommend that MDE rescind the proposed TMDL to develop a TMDL that includes input from stakeholders as MDE initially envisioned. The Commentors also note that their comments are supported by Eliza Steinmeier, the Baltimore Harbor Waterkeeper.

Response: MDE did not stop holding the SAG meetings in 2003. MDE continued meeting on toxics issues, until the group came to an impasse resulting from Chesapeake Bay Foundation’s (CBF) insistence that the Department address ingestion of toxic sediment by microscopic invertebrates; the Department is still working with the University to address this issue. MDE sees no technical basis for rescinding the TMDL and believes the usual public participation provided the Department with adequate input from the community.

31. The commentor requests that the seasonal May 1 through October 31 nutrient loading goal for the Cox Creek WRF (Permit No. MD0021661) be increased from 68,484 lbs/growing season (3mg/L at 15 mgd) to 91,300 lbs/growing season (4 mg/L at 15 mgd). There are four (4) reasons for this request:

- Anne Arundel County is currently in the process of finalizing an Enhanced Nutrient Reduction (ENR) Agreement with MDE which covers all seven of the County's publicly owned wastewater treatment facilities including the Cox Creek WRF. Negotiations for this agreement have been ongoing for more than a year with the understanding that the National Pollution Discharge Elimination System (NPDES) limits for the Cox Creek WRF would be based on the equivalent of 4.0 mg/L at the rated plant capacity of 15.0 mgd on an annual average basis. Lower seasonal permit limits were not part of this negotiation process. The County hopes to have this document signed within the next month and for the ENR design for the Cox Creek WRF to proceed immediately thereafter and feels that it would be in bad faith for MDE to change the discharge limits for the Cox Creek WRF before the ENR Agreement has even been executed. All of our assumptions in these negotiations have been based on direction received from MDE that the loading goal for the Cox Creek WRF will be based on an average concentration of 4.0 mg/L at the design capacity (15 mgd).
- The Cox Creek WRF has traditionally received a very high strength influent wastewater (compared to the County's other six municipal wastewater treatment plants) and often sees very high peak flow events during wet weather periods. The facility has always had difficulty achieving full nitrification during cold weather periods (even after the BNR Upgrade). The facility is located on a relatively small parcel of land with no room for further expansion. The County is already prepared to commit to MDE to upgrade this facility to achieve ENR limits of 4.0 mg/L TN on an annual average basis. However, it is not clear that this facility can be economically upgraded to achieve the proposed 3.0 mg/L TN limit which would be required by the proposed Baltimore Harbor TMDL limit of 68,484 lbs/growing season. This is not to say achieving the proposed TMDL is technically impossible, but that it will be very costly to guarantee achievement of this level of treatment at the design capacity of the facility. Given limited funding resources, it seems that it would be in the best interest of all parties involved to set the seasonal and annual TMDL limits for the Cox Creek WRF at a more reasonably achievable 4.0 mg/L TN. Setting the limits at this point will provide some flexibility for Operations and therefore reduce the amount of added redundancy, which would otherwise be required for the design.
- Anne Arundel County is currently in the process of completing a new Comprehensive Sewer Strategic Plan, which will be finished later this year. The project build-out flow estimate for the Cox Creek WRF sewer service area (SSA) is 22.67 mgd. Expansion of the Cox Creek WRF will be necessary in the future to serve growth within the existing designated SSA unless wastewater flow can be diverted to another facility, such as the Patapsco WWTP in Baltimore City. Based on information received from MDE, the County has assumed that the Cox Creek WRF could be expanded within the proposed

ENR nitrogen loading limits by achieving less than 4.0 mg/L TN on an annual average basis (182,734 lbs/yr annually). For example, if the County could achieve 3.0 mg/L TN at the Cox Creek WRF on an annual average basis, the facility could be expanded to 20.0 mgd and still be within the 182,734 lbs/yr TN ENR loading cap assigned by MDE. However, if a 68,484 lbs/growing season TN limit is imposed by MDE under the Baltimore Harbor TMDL, this would prevent expansion of the Cox Creek WRF beyond its current capacity of 15.0 mgd because we do not believe that operation of the Cox Creek WRF to achieve significantly less than 3.0 mg/L TN is reliably possible on a seasonal basis. The additional anticipated flow from the existing SSA would all need to be redirected to other facilities - - most likely the Broadneck WRF or the Patapsco WWTP in Baltimore City. However, the Broadneck WRF is also limited by its ability to expand to serve the project 13.86 mgd from its own existing SSA and Anne Arundel County does not have an Agreement with Baltimore City to expand sewer flow allocation beyond the currently established quantities. Therefore, if the Waste Load Allocation assigned to the Cox Creek WRF is set at 68,484 lbs/growing season as proposed in the draft TMDL, it will limit the County's ability to serve the future residents and businesses in the currently designated Cox Creek SSA.

- The Waste Load Allocations for the Baltimore Harbor TMDL appear to impose an undue burden on municipalities (Anne Arundel County and Baltimore City) to achieve extremely low effluent nutrient concentrations than are required for industrial point sources. The two municipal systems, both of which treat flow from industries in the region and suffer from nitrification inhibition, high strength wastewaters, and high peak flows, are being asked to achieve 3.0 mg/L TN during the growing season while the industrial sources which have a much more consistent and controlled wastewater flow, are being assigned higher, more relaxed TN discharge goals. For example, the ISG Group has five NPDES permits included in the proposed TMDL Waste Loading Allocation, combined which are several times larger than the flow rate from the Cox Creek WRF, and are only being asked to achieve a 4.0 mg/L TN concentration. Other industries are being allowed to discharge at 25 mg/L TN (WR Grace), 8.13 mg/L TN (Millenium) or higher. Setting concentration limits for industries, especially those with such large loading contributions, higher than the concentration limits for municipalities treating a more difficult and unpredictable waste stream is simply not fair.

Response: MDE has reviewed the contributions of industrial discharges and found that ISG Steel warrants application of reduction goals. ISG Steel has met or exceeded nutrient loading reduction goals based on the initial baseline of 1985 as referenced in various preceding reports regarding Maryland's nutrient reduction goals and results. This was a facility-wide result based on the total discharge loads from all sources at the facility. However, upon further review, the Department believes the loadings from ISG outfalls should be reduced on an outfall specific basis, in this case outfall MP101, due to the relatively large loadings from this outfall location, and that the only option appears to be additional end of pipe treatment (the outfall already includes Best Available Technology and ammonia nitrogen removal technology.) The reduced allocation will be based on a percentage reduction proportional to what was considered practical for sewage treatment plants to achieve going from secondary treatment capability to Biological Nutrient Removal (BNR). Because this outfall involves

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industrial process effluent and likely does not have the same treatability level as the nutrients found in routine secondary effluent from sewage treatment plants, ENR equivalent levels are not yet considered practical at this time. The revised BNR equivalent reduction level in the revised TMDL will be accompanied by a future allocation reserve pending the result of the individual discharge permit process during which specific nutrient reduction feasibilities will be determined.

Based on the above changes in ISG's reductions goals, a portion of the current allowable nitrogen load can be set aside as a future allocation to account for growth in the region. The surface water discharge permitting in this region will be consistent with the TMDL, however the nitrogen future allocation load can be used to adjust the relative nitrogen allocation of point sources from the different facilities to address the issue that a seasonal nitrogen limit based on 3 mg/l may not be practical for ENR technology at some facilities.

Please also see the response to Comment 5.

Appendix A

Additional Comments Received After the Public Comment Period

The Chesapeake Bay Foundation (CBF) replied to MDE's original response to CBF's public comment period comments. Below are the comments in the second letter received by MDE regarding the Baltimore Harbor TMDLs for Nitrogen and Phosphorus.

1. The commentor expresses that the response letter did little to address the concerns raised: the "allowable" nitrogen load to Baltimore Harbor would be almost 50% higher than previously suggested, as well as their request that MDE rescind the proposed TMDL and re-convene the Baltimore Harbor Stakeholder Advisory Group (SAG) to develop a TMDL that includes input from stakeholders as MDE initially envisioned. The commentors re-iterate this request and have also asked the Environmental Protection Agency to withhold approval of the TMDL until these issues have been resolved.

Response: As explained above (see response to Comment 26), at the December 2003 MDE presented some initial analysis and figures, not a proposal. Numbers projected before the completion of the analysis changed as the analysis was completed. A TMDL is an objective process based on complex models and monitoring data and changes can occur throughout the last part of the development period. MDE sees no technical basis for rescinding the TMDL and believes the established TMDL usual public participation process, supplemented by the prior 2002-2003 SAG process have afforded the Department ample input from the community.

2. The total nitrogen load allocation in the proposed TMDL is approximately 50% higher than what was presented at the last full meeting of the Baltimore Harbor TMDL SAG in December, 2003. CBF believes a change of this magnitude merits a detailed explanation, particularly to the numerous stakeholders that regularly participated on the Baltimore Harbor SAG until its abrupt halt nearly three years ago. The commentor fails to see how the first three of the following given reasons for the differences between the December 2003 load reduction estimates and those in the draft 2006 TMDL: 1) the 2003 simulation attempted to meet water quality standards everywhere, including the Deep Channel, whereas the 2006 allocations do not; 2) model calibration was not complete in 2003; 3) reduction estimates in 2006 were based on three years of scenario input, rather than six years used in 2003; and revisions to industrial load allocations. The commentor continues that the presentation given at the December 2003 meeting, it was stated that the Deep Channel and Deep Water would not meet water quality criteria for dissolved oxygen. The commentor adds that the changes to the model or calibration could change the load allocation, but they don't see how that would account for the magnitude of the change observed – an increase in allowable annual loads of nitrogen of approximately 1.7 million pounds.

Response: As explained above, numbers projected before the completion of the analysis changed as the analysis was completed. For more details see the response to Comment 27.

3. The commentor states that the main reason for the difference between 2003 and 2006 appears to be the allocation of approximately one million pounds of nitrogen per year to two industrial sources – the Cox Creek Dredged Material Containment Facility (CCDMCF) and the International Steel Group (ISG). The commentor states that it is particularly troubling that the permit for CCDMCF was issued in 2004 allowing the discharge of more than 400,000 pounds of total nitrogen per year into a system that is already listed on the State’s 303(d) report as impaired for nutrients. The commentor continues that the addition of approximately 600,000 pounds to ISG, without explanation, from the initial 2003 allocation is also problematic and is inconsistent with load reductions the State committed to achieve in the Patapsco/Back River Tributary Strategy.

Response: MDE reiterates that the numbers presented at the 2003 meeting were from just one of an extensive list of loading scenarios tried while in the long process of developing the Harbor TMDL. The TMDL scenario presented in December 2003 was conducted early during the TMDL development process, and at that time, MDE was very aggressive in reducing nutrient loads from both point sources and nonpoint sources in an effort to attain DO criteria in the Deep Channel designated use. In a later scenario conducted for the purpose of sensitivity analysis, it was demonstrated that even after reducing by 100% nonpoint sources and point sources, the Deep Channel would not meet criteria. In other words, eliminating all nutrient loads from the system would still not bring the Deep Channel into compliance. Therefore, the goal of the TMDL is to achieve water quality criteria in all other designated uses of the Baltimore Harbor. These scenarios and their rationale are explained in the TMDL report.

One important issue to point out is that even after adding the 462,000 lbs/year of nitrogen allocated to CCDMCF, the reductions to point sources TN from the 1995-1997 baseline is close to 50% with an additional 11% from nonpoint sources (from baseline urban, agricultural, and other NPS loads to LA (not including MOS and FA) . Similarly, the reductions to point sources TP is approximately 28% with an additional 13% from nonpoint sources. Overall, the reduction from TN baseline loads is approximately 37% (including MOS and FA) and the overall reduction from TP baseline loads is close to 10%.

Finally, the allocation to ISG was reduced by an additional 66,410 pounds of TN and 45,690 pounds of TP after a final revision was made to the point sources loads. The TMDL as developed provides for the attainment of all designated uses in the Baltimore Harbor except for that of the Deep Channel.