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**Comment Response Document
Regarding the Total Maximum Daily Load (TMDL) of Sediment for the Bynum Run
Watershed, Harford County, Maryland**

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed TMDL of sediment for the Bynum Run Watershed. The public comment period was open from June 23, 2010 through July 23, 2010. MDE received three 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
Rupert Rossetti	Chair, Upper Western Shore Tributary Team	July 22, 2010	1 – 3
Carol Nau	Friends of Harford	July 23, 2010	4 – 6
Elizabeth Weisengoff	Harford County Dept of Public Works, Division of Highways and Water Resources	July 23, 2010	7 - 14

Comments and Responses

1. The commentor requests that the following sentence be added to the Executive Summary.

Details of these programs and additional funding sources can be found at <http://www.dnr.state.md.us/bay/services/summaries.html>.

Response: MDE agrees with the commentor's suggestion. The sentence has been added to the Executive Summary.

2. The commentor asks why there is no mention of Stormwater utilities as potential funding sources in the Assurance of Implementation section of the TMDL. The commentor also asks if this is this because they are still somewhat controversial, or for some other reason.

Response: The funding sources discussed in the Assurance of Implementation section of the TMDL are currently active, statewide programs. Stormwater conveyance systems are, for the most part, not owned and operated by the State. These conveyance systems primarily fall under the purview of local county and municipal jurisdictions. The State did, however, pass legislation in 1992 enabling local jurisdictions to implement a stormwater utility. Thus, the implementation of such a utility is left to the discretion of a local jurisdiction, and some local jurisdictions have in fact implemented such utilities, or similar taxes that are used to help pay for stormwater management. These jurisdictions include Montgomery County, Prince George's County, Charles County, the City of Rockville, the City of Takoma Park, and the City of Annapolis. As mentioned previously, however, since the TMDL is a State analysis,

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the Assurance of Implementation section of the TMDL documentation can only identify the State funding sources available to the local jurisdictions for implementation, and the development of other funding sources is at the discretion of the local jurisdiction itself.

3. The commentor inquires why the sediment reductions presented in the TMDL are focused solely on the regulated urban stormwater sources, while the agricultural component which comprises 10% of the land area and 17% of the sediment load, is not addressed. Additionally, the commentor inquires whether the allocation to *the predominant controllable* (and regulated) *source* is the standard approach, since it means that *water quality standards can be achieved in the most effective, efficient, and equitable manner*, or if the contribution from agriculture was deemed too small to warrant inclusion.

Response: In developing non-tidal sediment TMDLs, MDE utilizes two reduction strategies. The first strategy is to apply equitable reductions to all predominant controllable sediment sources and is used in watersheds where multiple predominant controllable sources are identified. The second strategy is to apply reductions only to urban land use, when urban land is identified as the only predominant controllable sediment source in a watershed. Since urban land use comprises 71% of the Bynum Run watershed and 77% of the total watershed sediment load, it was identified as the only predominant controllable source of sediment. Therefore, reductions were only applied to the urban land use sediment loads within the watershed. However, this is only one strategy by which the TMDL can be achieved.

Since the watershed lies entirely within Harford County and the Maryland State Highway Administration (SHA) Phase I municipal separate storm sewer system (MS4) permit areas, a jurisdictional small Phase II MS4, and any state and federal Phase II MS4s as well as all industrial activities within the watershed, there is a regulatory means by which the majority of the required reductions can be implemented. As described in the TMDL, Harford County's permit requires the jurisdiction to retrofit 10% of its existing impervious area where there is failing, minimal, or no stormwater management within a permit cycle (5 years). In the case of the Bynum Run Watershed, the retrofit requirements in the MS4 permit will provide a means by which the majority of the sediment reductions required to achieve the TMDL will be implemented. Additionally, the remainder of the urban stormwater sources of sediment to the watershed stream system are regulated via a permit of some sort (i.e., individual or general). Therefore, there is also a regulatory means by which to achieve the rest of the required urban sediment load reductions.

As previously mentioned, the urban only reduction strategy is only one means by which the TMDL can be achieved. While not specifically responsible for agricultural loads, the permittees have the ability to work with the agricultural community during the implementation phase of the TMDL (i.e., in the development of the watershed implementation plan, as per the precedent set in the newly revised Montgomery County MS4 permit) in order to achieve sediment loading reductions from possible agricultural sources. This may be particularly beneficial in specific stream reaches where agricultural sources have been identified by the county as causing or at least contributing to a sediment related biological impairment. The TMDL does not identify these areas, as sediment loadings are

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calculated on the larger, more generalized Maryland 8-Digit (MD 8-Digit) watershed scale, with the most specific spatial scale being the Chesapeake Bay Program Phase 5.2 (CBP P5.2) watershed model segment. However, the county's biological monitoring data and even MDE's Biological Stressor Identification (BSID) results for individual Maryland Biological Stream Survey (MBSS) stations could be used to identify these specific areas and sources.

4. The commentor asks why the agricultural sources of sedimentation to Bynum Run are not considered important enough to be remedied, even though they are correctable and contribute 17% of the sediment load.

Response: See response to Comment #3.

5. The commentor asks why road crossings of Bynum Run and its tributaries are not mentioned as a source of sedimentation in the discussion on urban land sediment control as they are a major source of runoff volume and thus stream bed erosion.

Response: The TMDL is a generalized planning tool developed at the MD 8-Digit watershed scale. This is the watershed scale at which the sediment impairment for the watershed was listed on the *2008 Integrated Report of Surface Water Quality in Maryland* (Integrated Report). Thus, the scale at which individual road crossings and their effect on streambank erosion are assessed is beyond the scope of this TMDL, but this should be taken into consideration during the implementation phase.

Despite the scale differences between the TMDL and the effect of individual road crossings on streambank erosion, the generalized effect of road crossings in the watershed (i.e., impervious surfaces in close proximity to the stream channel) is still included in the modeled watershed sediment load. The majority of the CBP P5.2 urban impervious land use *edge-of-field* (EOF) sediment loading rate is assumed to be from streambank erosion inputs. An increase in impervious surfaces within a watershed leads to 1) an increase in stream flow during storm events, thereby causing an increase in sheer stress and excessive erosion of streambanks and streambeds; and 2) a decrease in the terrestrial sources of sediment to the watershed stream system. Therefore, as the amount of CBP P5.2 urban impervious land use increases within a model segment, streambank erosion increases, and the percentage of both the urban sediment load and total watershed sediment load resultant from streambank erosion increase as well. As per the streambank erosion analysis in Section 2.2.1 of the main TMDL report, MDE estimates that 56% of the urban sediment load is resultant from streambank erosion, and 40% of the total watershed sediment load is resultant from streambank erosion. Thus, the effects of an increase in runoff volume and stream bed erosion due to road crossings over Bynum Run tributaries is inherently captured via the CBP P5.2 urban impervious land use and associated EOF sediment loading rate.

6. The commentor asks if there are sufficient funds available in the three funding sources mentioned in the TMDL to accomplish the task in the next decade, given the enormity of the task of sediment reduction that Harford County has to undertake. The commentor also asks why the possibility of a county storm water utility was not even mentioned.

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Response: There is no specified time-frame for TMDL achievement; ideally, however, the TMDL will be achieved in a timely fashion with respect to the cost of implementation. Relative to the funding sources referenced in the Assurance of Implementation Section of the main TMDL report, and pointed out by the commentor, limited funds are available via the State Water Quality Revolving Loan Fund, Stormwater Pollution Cost Share Program, and the Buffer Incentive Program (BIP). Each of these funding sources has an application process for local jurisdictions. The purpose of this application process is to appropriately allocate the limited funding available via each source. The ability of a local jurisdiction to secure funding from these sources will enhance the speed of TMDL implementation; however, the rate implementation and achievement of the TMDL depend on a wide variety of other factors and stakeholders from every level of government, individual source sectors, and even the general public.

More detailed information regarding the Water Quality Revolving Loan Fund and its application process can be found at:

http://www.mde.state.md.us/Programs/WaterPrograms/Water_Quality_Finance/Water_Quality_Fund/index.asp and

http://www.mde.state.md.us/Programs/WaterPrograms/Water_Quality_Finance/Loan_Application/Index.asp. Information regarding the Stormwater Pollution Cost Share Program and BIP can be found at <http://www.dnr.state.md.us/bay/services/summaries.html>. Additionally, the commentor does not make reference to Maryland's Nonpoint Source Management Program (§ 319 of the Clean Water Act) nor the Chesapeake Bay Trust, but these are some other possible funding sources available to local jurisdictions. Information regarding Nonpoint Source Management Program and Chesapeake Bay Trust can be found at <http://www.mde.state.md.us/Programs/WaterPrograms/319NPS/index.asp> and <http://www.cbtrust.org/site/c.miJPKXPCJnH/b.5368633/k.BDEA/Home.htm>, respectively.

Relative to stormwater utilities, please see the response to Comment #2.

7. The commentor requests the correction of the following typographical errors:
 - a. Page vi, Table ES-2: Change Subscripts to BR.
 - b. Page 3, Location: Replace MD – Route 24 with MD – Route 924.

Response: MDE appreciates the commentor's thorough review of the TMDL document. All typographical errors mentioned have been corrected.

8. The commentor requests that the Land Use Methodology section (Section 2.1.1) clearly state what year(s) the land cover is based upon.

Response: The TMDL has been updated to indicate that the University of Maryland's Regional Earth Science Applications Center (RESAC) land cover, which served as the Geographic Information System (GIS) framework for the development of the CBP P5.2 tabular land use, was developed from 2001 Thematic Mapper (TM) and Enhanced Thematic Mapper (ETM) Landsat-7 satellite imagery. The agricultural census data that were also used in the development of the CBP P5.2 tabular land use are indicated via reference/in-text

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citation to this data in Section 2.1.1 of the main TMDL report (i.e., 1982, 1987, 1992, 1997, and 2002 census years). The combination of the RESAC land cover and agricultural census data were used to develop the tabular land use for the entire CBP P5.2 model simulation (1985-2005). The actual land use year applied within the TMDL (i.e., in calculation of the baseline watershed sediment load) is CBP P5.2 2005 land use, which is indicated in Section 4.3 – Baseline Conditions.

9. The commentor states that there is no discussion of sediment reductions for stream restoration/bank stabilization and that this activity should be considered an applicable best management practice (BMP).

Response: While stream restoration is not thoroughly discussed in the TMDL, it is cited as one of the many BMPs that can be applied to reduce urban sediment loadings in the Assurance of Implementation Section of the TMDL, specifically, paragraph 4:

*Sediment from urban areas can be reduced by stormwater retrofits, impervious surface reduction, street sweeping, inlet cleaning, increases in urban tree canopy, **and** stream restoration.*

10. The commentor states that Harford County began installing BMPs in Bynum Run in 2003. The commentor then asks at what point in time the implementation of BMPs “count” towards achieving the TMDL.

Response: The baseline sediment load for the watershed reflects CBP P5.2 2005 land use conditions. The BMP factor is calculated based on BMPs reported by the county to MDE via the Phase I MS4 permitting process’s 2008 annual report. Thus, any BMPs reported to MDE as part of a Phase I MS4 jurisdiction’s 2008 annual report that were implemented in the watershed prior to 2005 would be accounted for within the estimated baseline sediment load for the watershed. Thus, the county is receiving credit for these BMPs within the TMDL. Any BMPs installed post 2005 and reported to MDE will be credited towards the achievement of the TMDL. MDE will continue to track BMPs, as submitted to the Department by the county via the Phase I MS4 permitting process, and subsequently report them to the Chesapeake Bay Program (CBP). These BMPs will continue to be included in some fashion within future versions of the CBP Phase 5 (CBP P5) watershed model.

11. The commentor asks if the Maryland SHA or Phase II MS4 jurisdictions have a 10% requirement.

Response: MDE is assuming that this comment is referring to the 10% retrofit requirement of existing impervious area where there is failing, minimal, or no stormwater management for Phase I MS4 jurisdictions. The Maryland SHA’s MS4 permit and Phase II general MS4 permits do not have the specific 10% retrofit requirement. However, any MS4 including the Maryland SHA, phase II small municipalities, and state and federal MS4s, as well as industrial stormwater permits are required to manage stormwater and contribute to meeting the Bynum Run sediment TMDL. Additionally, MDE has included provisions in the SHA's

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permit and Maryland Phase II permits for the restoration of impervious areas. As MS4 permits are reissued, the addition of explicit restoration requirements similar to the Phase I MS4 retrofit requirement may be considered.

12. The commentor states that if an existing parcel is redeveloped, it is subject to current stormwater regulations, and hence could be considered a “retrofit.” The commentator then asks how this will be tracked and incorporated into the implementation plan.

Response: There are a couple of possibilities, as to how redevelopment is captured in future modeling efforts used to demonstrate progress toward the TMDL and National Pollutant Discharge Elimination System (NPDES) Regulated Stormwater Wasteload Allocations (WLAAs). First, it is possible that redevelopment, which will be subject to Maryland’s Stormwater Management Act of 2007 and will be required to use a variation of environmental site design (ESD) to the maximum extent practicable, could be captured via a change in land use (i.e., urban impervious to urban pervious) due to the nature of ESD. Secondly, and more likely, redevelopment will be captured via the BMPs (i.e., infiltration associated with ESD) that are built as part of a given redevelopment project. These BMPs should be reported to MDE as retrofits as per the county’s annual MS4 reporting. Future modeling efforts would capture any landscape changes that have occurred within the watershed since the inception of the TMDL. These modeling efforts would therefore include: 1) any land use change from previous conditions, and/or 2) an increase in the number of BMPs on the same urban extent. These landscape changes would result in a decrease in modeled sediment loads, thereby demonstrating progress toward the TMDL due to redevelopment.

13. How will TMDL implementation be tracked? What agency is responsible for the tracking? How will it be determined if the implementation is achieving the goal of meeting the Use III designation?

Response: The process of tracking TMDL implementation is still in development. Ultimately, relative to the required regulated stormwater reductions, this responsibility lies with the permitted jurisdictions; however, MDE will be assisting and providing guidance.

There are several possibilities as to how implementation can be tracked. First, it is expected that upon completion of the forthcoming Chesapeake Bay nutrient and sediment TMDLs, the Chesapeake Bay Program Phase 5 (CBP P5) watershed model, the target loading rates and land use for which (specifically the CBP P5.2 watershed model) were applied in this sediment TMDL, will be available as a means by which to assess progress. BMP reporting by the local jurisdictions to MDE and MDE’s subsequent reporting to the Chesapeake Bay Program (CBP) will provide a means by which progress can be tracked using the CBP P5 watershed model. BMP data is recorded by local, State, and federal jurisdictions and subsequently reported to MDE as part of their NPDES Phase I MS4 permitting process. MDE then sends this data to CBP, and CBP incorporates this BMP data into the CBP P5 model. Permitted jurisdictions are also free to develop their own pollutant loading models, which have the ability to be far more spatially explicit than the CBP P5 watershed model.

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Biological monitoring data will be the true indicator as to whether or not the watershed stream system is meeting its Use III designation. Furthermore, it will also be the true indicator as to whether or not there has been any progress made via the TMDL implementation efforts. Even though state biological monitoring data (i.e., MBSS data) was solely applied in both the Integrated Report biological assessment for the watershed and the BSID analysis, county biological monitoring data can still provide useful insights into these assessments. For example, currently, county biological monitoring data is included to subjectively provide insight into the BSID analysis. However, the possibility exists in the future for county data to be fully incorporated into the Integrated Report biological assessment and/or the BSID analysis, but such data would have to meet the Integrated Report biological listing and BSID primary dataset criteria.

14. The commentor asks if there is a timeframe for meeting the TMDL.

Response: Currently in Maryland, there is no specified timeframe for meeting a TMDL. The new Montgomery County Phase I MS4 permit, however, does require that an implementation plan, for any applicable Stormwater WLAs, be developed within a year's time frame following the approval of a given TMDL. It is anticipated that the revised permits for other Phase I MS4 jurisdictions will follow suit.