

**Comment Response Document
Regarding the Total Maximum Daily Load of Sediment in the Georges Creek
Watershed, Allegany and Garrett Counties, Maryland**

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed Total Maximum Daily Load (TMDL) of Sediment in the Georges Creek Watershed, Allegany and Garrett Counties, Maryland. The public comment period was open from July 27, 2006 through August 28, 2006. The public comment period was then extended through September 4, 2006 to allow for review and comment of the “Addendum 1: Adjustment to CSO Loads – Georges Creek Sediment TMDL.” MDE received 1 set 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
Jennifer Schaafsma	Maryland Department of Agriculture	August 7, 2006	1 through 5

Comments and Responses

1. The commentor states that the sources of sediment in the TMDL do not include legacy sediments eroded from the channel and banks of the streams in the watershed. The commentor adds that this can be a significant load, especially in mining areas and areas that have seen urban development.

Response: The watershed sediment-loading model applied in this analysis is a lumped model where land use specific sediment yields (ton/ac/year) are based on literature information. The model is defined as lumped because many physical processes are combined into a single value and/or factor. This model does not explicitly capture the processes of stream bank or bed erosion, however, the effects of these are implicitly included in the underlying assumptions.

In the urban or developed lands, the sediment yield is estimated from the percentage of impervious area where the yield increases with increasing imperviousness. Because the terrestrial sediment source decreases with the growing impervious area it is assumed the additional sediment yield is driven by increased flow, which results in channel erosion. In non-urban land uses, erosion from the landscape is considered as the primary sediment source, however, it is widely recognized that not all eroded sediment is transported to the stream

system. This depositional effect is captured using a sediment delivery ratio, which is the proportion of the terrestrial erosion that reaches the stream system.

It would be expected that during the implementation planning process additional site level information be used to determine the appropriate type of best management practices. This information would determine whether upland or in-stream practices would best reduce the sediment loads and subsequently impact the stream's aquatic health.

2. The commentor requests that MDE use more recent data. Specifically, the commentor states that the erosion factors are out-dated. They were taken from an average of 1982 and 1987 values. Thus, they do not reflect improvements from best management practices that have been installed since that time. Therefore, these erosion factors do not accurately portray the baseline sediment load. Furthermore, because the erosion factors are from 1982 and 1987 data, the baseline load does not take into account the decrease in agricultural land by about 1% each years since then and the increase in agricultural land that is managed under soil conservation and water quality plans.

Response: Current watershed conditions are represented by using the year 2000 land use estimates from the Regional Earth Science Applications Center and National Land Cover Database maps, where various crop land uses are refined using the 1997 and 2002 Agricultural Census information. This current land use condition accounts for the amount of conventional versus conservation tillage. Additional information on best management practices is currently being compiled by the Chesapeake Bay Program (CBP) and is not currently available for distribution. However, it is assumed that most of the changes in crop land sediment loads will result from tillage practices which are captured in the year 2000 land use.

The Chesapeake Bay Program Phase V (CBP P5) crop land use edge of field loading factors are estimated by using the average National Resource Inventory (NRI) county estimates for the years of 1982 and 1987. This loading factor estimate represents an aggregate of all tillage practices. During this period, conservation tillage practices are about half of total cropland tillage practices, and edge of field loading rates for high till versus low till have been adjusted appropriately (US EPA CBP, 2006b – referenced in the document). The USEPA CBP assumes a difference between conventional and conservation sediment edge of field loading rates of about 40%. The edge of field sediment loading rates for conventional cropland are set at 125% of the NRI crop estimates, and rates for conservation cropland are set at 75% of the NRI estimates. Therefore, the relative edge of field sediment loadings for cropland categories are consistent with the time period.

The combination of the year 2000 land use estimates with the 1982 and 1987 targets represent an acceptable baseline condition for establishing a sediment

TMDL. Moreover, the advantage of the CBP P5 modeling system is that the data is equitable over the entire state, which is ideal for the reference watershed approach. Maryland Department of the Environment (MDE) attempts to use the most accurate, complete, and recent data as possible. Also, since TMDL development requires the consideration of all readily available data, using any dataset is contingent upon those data being applicable and appropriate, not just recent.

3. The commentor claims that the use of both the 2002 land use data and the 1982/1987 erosion factors may not be accurate for areas, such as the Georges Creek Watershed, that are impacted by mining.

Response: See response to comment 2. Furthermore, mining practices are captured through both the Load Allocation (LA) and the Wasteload Allocation (WLA). All active mining practices are included in the WLA (see table B-5 in the main document) because they are permitted dischargers with an observed TSS concentration. Mining practices that have been abandoned, either an entire site or a portion of a site, that have no permitted TSS concentration are captured in the LA. These abandoned sites are represented in the 2002 land use data as extractive land uses, which have an erosion factor based on best professional judgment (see table 2 in the main document).

4. The commentor states that the erosion factors for each county are similar except for the animal feeding operations and trampled pasture erosion factors. The commentor then says that the text should explain why these two erosion factors are so much higher in Garrett County than they are in Allegany County. Furthermore, the actual Georges Creek stream segment lies in Allegany County, which means that Garrett county sediment would have to travel further and would be attenuated. Also, the Allegany County Soil Conservation District has been more active than its Garrett County counterpart in writing soil conservation and water quality (SCWQ) plans. For example, there are currently 1,968 acres of SCWQ plans in the Allegany County portion of the Georges Creek watershed.

Response: The erosion factors for agricultural land uses were based on NRI (National Resources Inventory) values on a county level basis. Forested land use erosion factors were estimated by NRI on a watershed basis, thus they are the same from county to county within the same watershed. Erosion factors for impervious, pervious urban, extractive, and barren land uses were not calculated by NRI and instead were estimated based on regression analyses, literature surveys, and best professional judgment; thus, they are the same from county to county as well. The only land use erosion factors which vary from county to county are the agricultural land use erosion factors. Agricultural land uses are estimated by NRI on a county level basis because of the difference in soil conservation plans, water quality plans, and the use of best management practices. Thus, the erosion factors for Garrett County are much higher for trampled pasture and animal feeding operations land uses because it is not as active as Allegany

County in instituting and implementing these plans (see section 2.2.1 of the main document for further details).

The distance from the Garrett county portion of the watershed to the actual Georges Creek stream segment is inherently captured through the Chesapeake Bay Program Phase V Watershed Model. The Edge of Stream (EOS) load factors in the distance that a particular land use is from the main river reach. Therefore, the EOS load represents sediment that has been deposited on hillsides and in small order stream segments not represented by the model. The final baseline load does not include the sediment that never reaches the Georges Creek mainstem (see section 2.2.1 and equation 2.1 in the main document for more details).

5. The commentor says that according to the Garrett County Soil Conservation District, the only animal operations in the Garrett County portion of the watershed are smaller than Concentrated Animal Feeding Operations (CAFOs).

Response:

The TMDL analysis is in agreement with the Garrett County Soil Conservation district, as no permitted CAFOs were identified in the Georges Creek watershed. In Maryland, a permitted CAFO is defined as having 1000 animal units (animal unit = 1000 lbs) or more. For more information please visit:

http://www.mde.state.md.us/assets/document/permit/cafo_draft12-01-04.pdf

The total animal feeding operation land use within Georges Creek Watershed is approximately four acres and is less than 0.01% of the total land use area. This value is calculated based on the Chesapeake Bay Program Phase V watershed model. A description of the usage appears in Section 2.1.1 of the TMDL.