

Arundel County submitted revised Sediment TMDL Restoration Plans to MDE as Appendix H of the County's 2015 NPDES MS4 Annual Report. MDE provided comments on the revised plans in Attachment 2 to a letter from MDE dated April 29, 2016. MDE's comments and Anne Arundel County's response to those comments follow:

MDE Response to comments:

1. In order to estimate a new 2005 baseline load, Anne Arundel County inserted their 2005 impervious and pervious urban acreage and 2005 BMP acres into BayFAST. This was done in response to one of our previous comments, in order to resolve the issue of comparing unlike scenarios between the county's baseline and current progress loading estimates. The County says it applied the County MS4 Impervious and Pervious urban acres from the *MAST 2005 Local TMDL Base Scenario* in BayFAST to build its new 2005 baseline scenario. This approach is completely fine, but we would ask why the County decided to use MAST impervious estimates rather than plugging in their own impervious surface data into BayFAST. The County has impervious data for 2004 conditions. This could have been used as a surrogate for 2005.

Anne Arundel County Response: MAST impervious and pervious acres were used to model the 2005 baseline loads in BayFAST because we had originally wanted the land use data source to remain the same between 2005 baseline models and 2015 progress models, which were completed in MAST using the 2015 progress land use background data. This modeling approach accounted for increased loads in 2015; however, based on guidance by MDE, we switched to an approach that does not account for growth and modeled all restoration on top of the baseline land use of the local TMDL. We retained the MAST 2005 impervious and pervious land use in BayFAST for the modeling.

New comments (applicable to both the original and new plans):

1. It would be beneficial if the County could provide the BMP implementation levels associated with their 2005 baseline scenario. Since the 2015 progress BMP implementation levels provided in the revised report included both pre-2005 BMPs and restoration BMPs installed between 2005 and 2015, it is difficult to determine the levels of implementation that have occurred in between the baseline and progress scenarios for certain BMPs. Since MAST and BayFAST are not currently capable of isolating the effects of certain types of BMPs, if the County provided us with information on 2005 BMP implementation levels, we could at least run isolation scenarios to check where the majority of the reductions are coming from that they are crediting. This could also be resolved if the County shared with us their 2005 baseline, 2015 progress, and 2025 planning scenarios in BayFAST.

Anne Arundel County Response: The table has been revised to include a column for 2005 Baseline treatment and only show 2015 restoration BMPs for the column "2006-2015 Restoration".

2. There seems to be confusion within and between Tables 12 and 16 of the County's sediment plans as to whether or not the 2025 implementation levels are cumulative, or if they only represent implementation levels since 2015. We would ask the County to clarify if the 2025 values in Tables 12 and 16 are cumulative and subsequently to double check the values and make sure they are consistent for all (non-annual) BMPs.

Anne Arundel County Response: Table 12 has been edited to show restoration BMPs from 2006-2015 and planned implementation levels from 2016-2025. Table 16 has been edited so that only implementation levels since 2015 are shown. We also added a column ("Total") to show cumulative implementation levels (i.e., restoration) for both tables. Baseline BMPs are no longer included in Tables 12 and 16.

3. Why is the cost of the County's stream restoration projects not included in Table 14 of their sediment plans?

Anne Arundel County Response: The cost section was incomplete at the time of MDE submittal. All costs are now included in the plan.

4. Are the SPSCs the County plans to implement being installed in-stream (i.e., in perennial stream channels) or at the end of outfalls in swales or ephemeral channels, prior to discharging to a perennial stream?

Anne Arundel County Response: All County SPSCs are completed at the end of outfalls, prior to discharging to a perennial stream. This information was added to the BMP bullet on SPSC in Section 4.2.

5. Since the inlet cleaning and street sweeping load reductions are calculated by the County outside of BayFAST, we would ask the County to provide these calculations to us, or include them in the plans. It is hard to determine the load reduction the County is estimating for these practices in their 2015 progress scenario, since 1) they do not specify the annual average amount of material collected from their inlet cleaning, and 2) they do not indicate the no action loading rate they use in applying their 25% street sweeping reduction efficiency to 29.6 curb miles.

Anne Arundel County Response: Inlet cleaning and street sweeping calculations were compiled and are included below.

Inlet Cleaning Methodology

Watershed	Little Patuxent	Patapsco Lower North Branch	Upper Patuxent	
Number of inlets	3,822	4,025	724	Number of inlets in watershed from GIS
% of all inlets	11.06%	11.65%	2.10%	Number of inlets in watershed/total inlets Countywide
# of Inlets cleaned	202	213	38	Number of inlets cleaned x % of inlets
Inlet Solids	60,536	63,751	11,467	Number of inlets cleaned x 300 lbs per inlet
Inlet Solids Dry Weight	42,375	44,626	8,027	Inlet solids x 70% dry weight conversion factor
TSS Reduction (EOS-lbs)	8,899	9,371	1,686	Dry weight x (420 lbs/2,000 lbs)

Number of inlets was obtained from a GIS intersection of Anne Arundel County's storm drain inlet layer and watershed boundaries. The number of inlets in each watershed was divided by the total number of inlets in the county to obtain a percentage of inlets in each watershed. This percentage of inlets in each watershed was then applied to the most recent count of inlets cleaned to obtain an estimate of inlets cleaned in each watershed. The amount of inlet solids removed was estimated using 300 lbs of material for each inlet. The inlet solids dry weight was estimated by taking 70% of the inlet solid estimate. The amount of sediment reduction was calculated using the inlet solid dry weight multiplied by 420 lbs/2,000 lbs, the TSS reduction published in Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated – Guidance for National Pollutant Discharge Elimination System Stormwater Permits. Maryland Department of the Environment. August 2014. Baltimore, MD.

Street Sweeping Methodology

Watershed	Little Patuxent	Patapsco Lower North Branch	Upper Patuxent	
Curb-Miles Swept	38.0	46.5	4.9	Curb-miles swept from AA County contractor records
Total Feet Swept	200,640.0	245,308.8	25,819.2	Curb-miles x (5,280 ft/1 mile)

Total Square Feet Swept	2,006,400	2,453,088	258,192	Total Feet x 10 ft per lane
Total Acres Swept	46.1	56.3	5.9	Square Feet x (1 acre/43,560 sq ft)
Loading Rate	351.5	540.6	433.4	No action loading rate
Total TSS EOS-lbs	16,190.4	30,442.4	2,568.9	Loading rate x Total Acres
Load Removed TSS EOS-lbs	4,047.6	7,610.6	642.2	Total TSS x (420 lbs/2,000lbs)

The amount of curb-miles swept came from Anne Arundel County's street sweeping contractor. Total feet swept was calculated by multiplying curb-miles swept by 5,280 feet per mile. Total square feet swept was calculated by multiplying total feet swept by an estimated 10 feet lane width. Total acres swept was calculated by multiplying total square feet swept by 1 acre/43,560 square feet. The loading rate is the no action loading rate used in the modeling for these restoration plans. Loading rate was then multiplied by the total acres swept to calculate the total amount of TSS in the swept area within each watershed. The amount of sediment reduction was calculated using the total TSS multiplied by 420 lbs/2,000 lbs, the TSS reduction published in Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated – Guidance for National Pollutant Discharge Elimination System Stormwater Permits. Maryland Department of the Environment. August 2014. Baltimore, MD.