



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
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Decision Rationale
Total Maximum Daily Loads of Trash
For the Anacostia River Watershed
Montgomery and Prince George's Counties, Maryland
and the District of Columbia

A handwritten signature in black ink, appearing to read "Jon M. Capacasa".

Jon M. Capacasa, Director
Water Protection Division

Date: September 21, 2010

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I. Introduction

The Clean Water Act (CWA) requires a Total Maximum Daily Load (TMDL) be developed for those water quality limited segments 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 (MOS), that can be present in a water quality limited waterbody without causing an impairment.

This document sets forth the U.S. Environmental Protection Agency's (EPA) rationale for approving the TMDLs for trash in the Anacostia River watershed. These TMDLs were established to address impairments of water quality, caused by trash, as identified in both the Maryland and District of Columbia 2008 Section 305(b)/303(d) Integrated Reports of surface water quality. The Maryland Department of the Environment (MDE) and the District of Columbia Department of the Environment (DDOE) submitted the report, *Total Maximum Daily Loads of Trash for the Anacostia River Watershed, Montgomery and Prince George's Counties, Maryland and the District of Columbia*, dated August, 2010, to EPA for final review on September 8, 2010, and September 15, 2010, respectively.

EPA's review determined that the TMDLs meet the following seven regulatory requirements pursuant to 40 CFR Part 130.

1. The TMDLs are designed to implement applicable water quality standards.
2. The TMDLs include a total allowable load as well as individual wasteload allocations (WLAs) and load allocations (LAs).
3. The TMDLs consider the impacts of background pollutant contributions.
4. The TMDLs consider critical environmental conditions.
5. The TMDLs consider seasonal environmental variations.
6. The TMDLs includes a MOS.
7. The TMDLs have been subject to public participation.

In addition, these TMDLs considered reasonable assurance that the TMDL allocations assigned to nonpoint sources can be reasonably met.

II. Summary

These TMDLs specifically allocate the trash loads to be captured, prevented from entering, or removed from the Anacostia River watershed. Sources of trash in the Anacostia River include point and nonpoint sources. For the purposes of these TMDLs, items considered to have come from point sources include materials that are small enough to travel through a sewer

system, such as glass bottles, aluminum cans, and plastic bags. Trash and debris that are too large to travel through a sewer system, such as construction materials, appliances, and carpet, are considered to have come from nonpoint sources.

As indicated in Tables 7 and 8, below, WLAs were developed for the District of Columbia Combined Sewer System (CSS) and Municipal Separate Storm Sewer (MS4) systems, the Montgomery and Prince George's Counties' Phase I MS4 systems, the Montgomery and Prince George's Counties' Phase II Municipality MS4 systems, the Maryland State Highway Administration, federal facilities, and other smaller point sources. The fact that the TMDLs do not assign WLAs to any other point sources in the watershed should not be construed as a determination by either EPA, MDE, or DDOE that there are no additional point sources in the watershed that are subject to the National Pollutant Discharge Elimination System (NPDES) program. In addition, the fact that EPA is approving these TMDLs does not mean that EPA has determined whether some of the sources discussed in these TMDLs, under appropriate conditions, might be subject to the NPDES program.

TMDL endpoints represent the water quality targets used to quantify TMDLs and their individual components. There is no numeric water quality criterion for trash in either Maryland or District of Columbia waters. Accordingly, to identify a TMDL endpoint, Maryland and the District needed to interpret their respective narrative water quality criteria applicable to trash. For these trash TMDLs, the endpoint is equal to 100 percent removal of the baseline load, calculated as an average (because of high seasonal and annual variability) of the measured or estimated removal rate. The baseline load represents a typical annual load, and is defined as the annual trash load calculated from monitoring data obtained through storm drain and CSO monitoring and in-stream sampling. This numeric target is derived from narrative water quality criteria and includes both an explicit and an implicit MOS.

Unlike most TMDLs, which are expressed in positive terms of the loads of a pollutant that may be added to a waterbody, these trash TMDLs are expressed in the negative, i.e., in terms of quantities of trash that must be captured, prevented from entering, or removed from the waterbody. In light of how trash is transported to the river, this negative expression is appropriate to the pollutant and water quality conditions to be addressed. *See* 40 C.F.R. § 130.2(i). The TMDLs are presented as both annual loads (tons per year) and daily loads (tons per day) to be captured, prevented from entering, or removed from the watershed. A summary of the daily and annual trash TMDLs for the Maryland and District of Columbia portions of the Anacostia River watershed are presented in Tables 1 through 4, respectively.

Table 1. Daily Trash TMDLs for Maryland portion of Anacostia watershed

WLA (lbs/day removed)	LA (lbs/day removed)	MOS	TMDL (lbs/day removed)
1,603.2	1,190.7	Implicit/Explicit	2,793.9

Table 2. Annual Trash TMDLs for Maryland portion of Anacostia watershed

WLA (lbs/yr removed)	LA (lbs/yr removed)	MOS	TMDL (lbs/yr removed)
585,179	434,598	Implicit/Explicit	1,019,777

Table 3. Daily Trash TMDLs for District of Columbia portion of Anacostia watershed

WLA (lbs/day removed)	LA (lbs/day removed)	MOS	TMDL (lbs/day removed)
607.3	57.7	Implicit/Explicit	665.0

Table 4. Annual Trash TMDLs for District of Columbia portion of Anacostia watershed

WLA (lbs/yr removed)	LA (lbs/yr removed)	MOS	TMDL (lbs/yr removed)
221,665	21,050	Implicit/Explicit	242,715

A breakdown of the annual and daily LAs assigned to nonpoint sources in the Maryland and District of Columbia portions of the Anacostia River watershed are provided in Tables 5 and 6, respectively.

Table 5. Load Allocations for Maryland portion of Anacostia watershed

Jurisdiction	Baseline Nonpoint Source Load (lbs/yr)	MOS (5%)	Annual LA to be removed (lbs/yr)	Daily LA to be removed (lbs/day)
Montgomery County	65,945	3,297	69,242	189.7
Prince George's County	347,958	17,398	365,356	1,001.0
Total			434,598	1,190.7

Table 6. Load Allocations for District of Columbia portion of Anacostia watershed

Jurisdiction	Baseline Nonpoint Source Load (lbs/yr)	MOS (5%)	Annual LA to be removed (lbs/yr)	Daily LA to be removed (lbs/day)
District of Columbia Upper Anacostia	18,343	917	19,260	52.8
District of Columbia Lower Anacostia	1,705	85	1,790	4.9
Total			21,050	57.7

A breakdown of the daily and annual WLAs assigned to permitted point sources in the Maryland and District of Columbia portions of the Anacostia River watershed is provided in Tables 7 and 8, respectively.

Table 7. Wasteload Allocations for Maryland portion of Anacostia watershed

Permittee	Subbasin	NPDES permit number	Baseline WLA to be removed (lbs/yr)	MOS (5%)	WLA to be removed (lbs/yr)	Total WLA to be removed (lbs/yr)	Total daily WLA to be removed (lbs/day)
Montgomery County Phase I MS4	Little Paint Branch	MD0068349	29,122	1,456	30,578	240,117	83.8
	Paint Branch		72,259	3,613	75,872		207.9
	Northwest Branch		120,865	6,043	126,908		347.7
	Sligo Creek		6,437	322	6,759		18.5
Montgomery County Phase II MS4 - Takoma Park	Sligo Creek	MDR055500	1,236	62	1,298	5,386	3.6
	Lower Northwest Branch		3,893	195	4,088		11.2
Maryland State Highway Administration – Montgomery County		MD0068276	5,756	288		6,044	16.6
Federal permits – Montgomery County		MDR055501 (General Permit)	1,657	83		1,740	4.8
Other NPDES permits – Montgomery County*		Aggregated	2,031	102		2,133	5.8
Prince George’s County MS4 – Non-tidal	Beaverdam Creek	MD0068284	6,004	300	6,304	167,258	17.3
	Lower Beaverdam Creek		23,437	1,172	24,609		67.4
	Cabin Branch		14,301	715	15,016		41.1
	Indian Creek		17,866	893	18,759		51.4
	Little Paint Branch		25,560	1,278	26,838		73.5
	Northwest Branch		35,376	1,769	37,145		101.8
	Northeast Branch		31,190	1,560	32,750		89.7
	Paint Branch		1,080	54	1,134		3.1
Watts Branch	4,479	224	4,703	12.9			
Prince George’s County MS4 – Tidal		MD0068284	11,335	567		11,902	32.6
Prince George’s County Phase II MS4 – Aggregated*	Beaverdam Creek	MDR055500	1,932	97	2,029	119,257	5.6
	Lower Beaverdam Creek		15,401	770	16,171		44.3
	Cabin Branch		3,060	153	3,213		8.8
	Indian Creek		105	5	110		0.3
	Little Paint Branch		2,882	144	3,026		8.3
	Northwest Branch		4,886	244	5,130		14.1
	Northeast Branch		56,982	2,849	59,831		163.9
	Watts Branch		4,035	202	4,237		11.6
Tidal	24,295	1,215	25,510	69.9			
Maryland State Highway Administration – Prince George’s County		MD0068276	13,461	673		14,134	38.7
Federal permits – Prince George’s County		MDR055501 (General Permit)	5,890	295		6,185	16.9
Other NPDES permits – Prince George’s County*		Aggregated	10,498	525		11,023	30.2
Total MD Point Source Load						585,179	1,603.2

*A list of permitted point sources included in the aggregate WLAs can be found in Appendix A of the TMDL report.

Table 8. Wasteload Allocations for District of Columbia portion of Anacostia watershed

Permittee	Subbasin	NPDES permit number	Baseline WLA to be removed (lbs/yr)	MOS (5%)	WLA to be removed (lbs/yr)	Total WLA to be removed (lbs/yr)	Total daily WLA to be removed (lbs/day)
District of Columbia MS4	Upper Anacostia	DC0000221	79,874	3,994	83,868	108,347	229.8
	Lower Anacostia		23,314	1,166	24,480		67.1
District of Columbia CSO	Upper Anacostia	DC0021199	62,401	3,120	65,521	98,265	179.5
	Lower Anacostia		31,185	1,559	32,744		89.7
District of Columbia – Other	Upper Anacostia	Aggregated	7,879	394	8,273	15,053	22.7
	Lower Anacostia		6,457	323	6,780		18.6
District of Columbia total point source load						221,665	607.3

A 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 that considers current and foreseeable conditions, the best available data, and accounts for uncertainty with the inclusion of a MOS value. The option is always available to refine a TMDL for resubmittal to EPA for approval if environmental conditions, new data, or the understanding of the natural processes change more than what was anticipated by the MOS.

III. Background

The Anacostia River—with its headwaters in Montgomery and Prince George’s Counties, Maryland—drains, more than 170 square miles. The watershed terminates at the confluence with the Potomac River in the District of Columbia. Approximately 80 percent of the watershed is in Maryland and 20 percent in the District of Columbia. The main subwatersheds include the Northwest Branch, Paint Branch, Little Paint Branch, Indian Creek, Upper and Lower Beaverdam Creeks, the Northeast Branch, Still Creek, Brier Ditch, Fort Dupont, Pope Branch, Watts Branch, Hickey Run and Sligo Creek. The upper tributaries are non-tidal freshwater, while the mainstem of the Anacostia River is tidally influenced. About 45% of the watershed is residential, while undeveloped land (primarily forests and parks) covers just under 30% of the watershed. Other land uses within the watershed include commercial and institutional (15%), agriculture (4.5%), industrial (4%) and water and wetlands (1%). The total population of the watershed is approximately 800,000.

In Maryland, both the tidal (MD-ANATF) and non-tidal (MD-02140205) sections of the Anacostia River were originally listed on the Maryland 2006 Integrated Report as impaired by trash and debris. In the District of Columbia, the Upper Anacostia River (DCANA00E) and Lower Anacostia River (DCANA00E) were originally listed on the District of Columbia 2006 Integrated Report as impaired by trash. Both Maryland and the District of Columbia have listed the Anacostia River and its tributaries (both tidal and non-tidal sections) on various iterations of their Section 303(d) lists for a variety of impairments. These TMDLs address the trash and debris impairments only. Other stressors have been or will be addressed in separate actions.

CWA Section 303(d) and its implementing regulations require that TMDLs be developed for water quality limited segments identified as impaired by the State where technology based and other required controls do not provide for attainment of water quality standards. The trash TMDLs submitted by MDE and DDOE are designed to allow for the attainment of applicable water quality standards relevant to trash. Refer to Tables 1 through 4, above, for a summary of allowable loads.

IV. Discussion of Regulatory Conditions

EPA finds that MDE and DDOE have provided sufficient information to meet all seven of the basic requirements for establishing trash TMDLs for the Anacostia River watershed. EPA, therefore, approves the trash TMDLs for the Anacostia River watershed. This approval is outlined below according to the seven regulatory requirements.

1) The TMDLs are 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.

Maryland Water Quality Standards

Maryland's water quality standards are established in the Code of Maryland Regulations (COMAR) Title 26 Subtitle 08, Chapter 2. In Maryland, the surface water use designation for the Anacostia River mainstem and its tributaries is Use I-P (*Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply*), except for the tidal portion of the Anacostia River mainstem (which is designated as *Use II: Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting*), Paint Branch and its tributaries (which are designated as *Use III: Nontidal Coldwater*), and Northwest Branch and its tributaries (which are designated as *Use IV: Recreational Trout Waters*), (COMAR, Chapter 26.08.02.08 O).

Maryland does not currently have numeric water quality criteria for trash. However, Maryland has general narrative criteria, applicable to all surface waters (COMAR, Chapter 26.08.02.03), which states:

The waters of this [s]tate may not be polluted by:

- (1) Substances attributable to sewage, industrial waste, or other waste that will settle to form sludge deposits that:
 - (a) Are unsightly, putrescent, or odorous, and create a nuisance, or
 - (b) Interfere directly or indirectly with designated uses.
- (2) Any material, including floating debris, oil, grease, scum, sludge, and other floating materials attributable to sewage, industrial waste, or other waste in amounts sufficient to:
 - (a) Be unsightly
 - (b) Produce taste or odor
 - (c) Change the existing color to produce objectionable color for aesthetic purposes
 - (d) Create a nuisance, or
 - (e) Interfere directly or indirectly with designated uses.

District of Columbia Water Quality Standards

Designated uses in the District of Columbia's water quality standards are established in the District of Columbia Municipal Regulations 21.11.1101.1. In the District of Columbia, the Anacostia River mainstem has the following designated uses: Class A (*primary contact recreation*), Class B (*secondary contact recreation and aesthetic enjoyment*), Class C (*protection and propagation of fish, shellfish and wildlife*), Class D (*protection of human health related to consumption of fish and shellfish*), and Class E (*navigation*). Except for Hickey Run and Watts Branch, all tributaries of the Anacostia River are designated as Class A, B, C, and D waters. Hickey Run and Watts Branch are designated as Class B, C, and D waters.

Like Maryland, the District of Columbia does not currently have numeric water quality criteria for trash. However, Title 21, Section 1104 of District of Columbia Municipal Regulations establishes general narrative criteria, applicable to all surface waters, which states:

The surface waters of the District shall be free from substances in amounts or combinations that do any one of the following:

- (a) Settle to form objectionable deposits;
- (b) Float as debris, scum, oil, or other matter to create a nuisance;
- (c) Produce objectionable odor, color, taste, or turbidity;
- (d) Cause injury to, are toxic to, or produce adverse physiological or behavioral changes in humans, plants, or animals;
- (e) Produce undesirable or nuisance aquatic life or result in the dominance of nuisance species; or
- (f) Impair the biological community that naturally occurs in the waters or depends upon the waters for its survival and propagation.

Additional narrative standards specific to each class of waters and relevant to these TMDLs include the following:

Class A waters shall be free of discharges of untreated sewage, litter and unmarked submerged or partially submerged man-made structures that would constitute a hazard to the users of Class A waters.

The aesthetic qualities of Class B waters shall be maintained. Construction, placement or mooring of facilities not primarily and directly water oriented is prohibited in, on, or over Class B waters unless:

- (a) The facility is for the general public benefit and service, and
- (b) Land based alternatives are not available.

Class C streams shall be maintained to support aquatic life and shall not be placed in pipes.

Class E waters shall be free of unmarked submerged or partially submerged man-made objects that pose a hazard to users of these waters.

In their respective Section 303(d) lists, both Maryland and the District have interpreted trash levels in the Anacostia River watershed as exceeding the quantity of trash that would be consistent with the narrative water quality criteria referenced above. Accordingly, the objective of these trash TMDLs is to reduce trash loadings in the Anacostia River watershed in order to meet the narrative water quality criteria and support the designated uses. EPA believes this is a reasonable and appropriate water quality goal.

The TMDL endpoint represents a numeric interpretation of instream conditions that will attain the applicable narrative water quality standard. In this case, the narrative water quality criteria of both Maryland and the District include terms, such as "nuisance" and "objectionable", that include a subjective component. Such narrative criteria require gap-filling by the appropriate regulatory agency. For the Anacostia River watershed trash TMDLs, Maryland and the District of Columbia exercised their best professional judgment to identify a TMDL endpoint of 100 percent removal or capture of the baseline load, calculated as an average (because of high seasonal and annual variability) of the measured or estimated removal rate, as an instream condition that will attain the narrative water quality criteria. The baseline load represents a typical annual load, and is defined as the annual trash load calculated from monitoring data obtained through storm drain and CSO monitoring as well as in-stream sampling. The monitoring and sampling data on which the TMDLs are based are described in the TMDL report.

As interpreted by Maryland and the District of Columbia, the TMDL endpoint of 100 percent removal of the baseline load is not the same as zero (0) trash in the waterway, however both jurisdictions conclude that achieving this TMDL endpoint will result in compliance with their narrative water quality standards. Maryland and the District of Columbia also indicate that removal of 100 percent of the baseline load would be sufficient to avoid interference with designated uses. EPA agrees that the TMDL endpoint represents a reasonable interpretation of Maryland's and the District's narrative water quality standards.

2) *The TMDLs include a total allowable load as well as individual wasteload allocations and load allocations.*

Total Allowable Load

As presented above, the narrative water quality criteria in Maryland and the District of Columbia describe unacceptable levels of trash in subjective terms such as *objectionable*, *nuisance*, and *unsightly*. EPA's *Quality Criteria for Water 1986* states with respect to aesthetic uses that such "concepts may vary within the minds of individuals encountering the waterway," i.e., a narrative was constructed because an objective, quantifiable threshold cannot be developed. Accordingly, the TMDL is expressed as the quantity of trash that must be captured, prevented from entering, or removed for the waterbody to achieve the narrative criteria. Unlike most TMDLs, which are expressed in terms of the loads of a pollutant that may be added to a waterbody, these trash TMDLs are expressed in the negative, i.e., in terms of quantities of trash that must be captured, prevented from entering, or removed from the waterbody. Section 303(d)(1)(C) of the Clean Water Act requires loads "to be established at a level necessary to implement the applicable water quality standards." Federal regulations at 40 CFR §130.2(i) provide flexibility on how the TMDLs can be expressed in terms of "either mass per time, toxicity, or other appropriate measures." In this case, given the nature of trash and how it is

transported to the waterbody, expression of the WLAs and LAs in terms of trash to be captured, prevented from entering, or removed from the waterbody is an “appropriate measure.” The annual and daily trash TMDLs for the Anacostia River watershed are presented in Tables 1 through 4, above.

EPA regulations at 40 CFR § 130.2(i) state *that the total allowable load shall be the sum of individual WLAs for point sources, LAs for any nonpoint sources, and any natural background concentrations.* The TMDLs for trash for the Anacostia River watershed are consistent with 40 CFR § 130.2(i).

Wasteload Allocations

For the purposes of these TMDLs, items considered to have come from point sources include materials that are small enough to travel through a sewer system, such as glass bottles, aluminum cans, and plastic bags. WLAs were developed for the District of Columbia Combined Sewer System (CSS) and Municipal Separate Storm Sewer (MS4) systems, the Montgomery and Prince George’s Counties’ Phase I MS4 systems, the Montgomery and Prince George’s Counties’ Phase II Municipality MS4 systems, the Maryland State Highway Administration, federal facilities, and other smaller point sources.

WLAs were calculated using the land-use-based trash loading rates from stormwater outfall monitoring and the land use distribution within the watershed. A detailed description of the stormwater outfall monitoring protocols (Sections 2.2.1 and 2.2.2) and point source loading rate calculations (Sections 4.1.1, 4.1.2 and 4.1.4) are provided in the TMDL Report. A detailed breakdown of the WLAs assigned to permitted point sources in the Anacostia River watershed is provided in Tables 7 and 8, above.

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 WLA for the discharge prepared by the State and approved by EPA. The CWA definition of “effluent limitation” is quite broad (effluent limitation is “any restriction...on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources...”). See CWA 502(11). For further guidance, refer to Benjamin H. Grumbles memo (November 15, 2006) titled *Establishing TMDL Daily Loads in Light of the Decision by the U.S. Court of Appeals for the D.C. Circuit in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 (April 25, 2006) and implications for NPDES Permits.* To ensure consistency with this TMDL, if an NPDES permit is issued for a point source that discharges one or more of the pollutants of concern in the Anacostia River or tributaries that are part of this TMDL, any deviation from the WLAs 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 the Fact Sheet will be

provided for review and comment to EPA and to each point source included in the TMDL analysis, as well as, any local and State agency with jurisdiction over land uses for which LA changes may be impacted. It is also expected that MDE and DDOE will require periodic monitoring of the point source(s) for trash, through the NPDES permit process, in order to monitor and determine compliance with the TMDL's WLAs.

Load Allocations

For the purposes of these TMDLs, items considered to have come from nonpoint sources include items that are too large to travel through a sewer system; such as construction materials, appliances, and carpet. Tables 5 and 6, above, provide a detailed breakdown of the LAs for the Anacostia River watershed. According to Federal regulations at 40 CFR § 130.2(g), LAs 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.

LAs were calculated using data collected from quarterly stream surveys conducted at more than 50 locations throughout the watershed. A detailed description of the stream survey protocols (Sections 2.2.3 and 2.2.4) and nonpoint source loading rate calculations (Sections 4.1.3 and 4.1.5) are provided in the TMDL Report.

Based on the foregoing, EPA has determined that the TMDLs are consistent with the regulations and requirements of 40 CFR Part 130.

3) The TMDLs consider the impacts of background pollutant contributions.

Because the TMDL covers the entire watershed, there are no upstream sources of trash. In addition, unlike some pollutants, trash does not occur naturally in the environment. Finally, the TMDLs account for the impact of any potential background pollutant contributions by considering the trash load from all land uses.

4) The TMDLs consider critical environmental conditions.

EPA 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 TMDLs are protective of water quality during the times and under the conditions when water quality is most susceptible. 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 standards¹. 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.

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.

In the Anacostia Watershed, the critical conditions for trash are high flow events because these events represent conditions during which trash is most easily transported to and through streams and sewer systems. These critical conditions are accounted for in this TMDL because data were collected over four seasons and included monitoring after rain events that led to high flow conditions. Monitoring activities were conducted after a range of rainfall conditions, including several storms events with totals over 0.5 inches of rain, at least one storm with over 3 inches of rain during the event, and several storms with maximum intensities between 3 and 4 inches per hour. The annual rainfall for 2008 (46.49 inches) and 2009 (46.90 inches) was well above the long-term average annual rainfall of 39.35 inches (National Weather Service 2010). Further, the season rainfall averages were within about an inch of the long-term seasonal average, except for the spring of 2009 when 14.24 inches of rain fell, well above the long-term spring average of 9.00 inches (National Weather Service 2010). The 50-year average annual rainfall was used to account for long-term conditions in the watershed.

5) *The TMDLs consider seasonal environmental variations.*

Seasonality is considered in the monitoring data that is used to calculate the baseline trash load and TMDL target in the Anacostia River watershed. Trash data collection was conducted over four seasons to account for possible localized seasonal variation in trash loading. As set forth above, the seasonal rainfall averages during the monitoring period were within about an inch of the long-term seasonal average, with the exception of spring 2009, when 14.24 inches (well above the long-term spring average of 9.00 inches) fell.

6) *The TMDLs include a Margin of Safety.*

The requirement for a MOS is intended to add a level of conservatism to the modeling process in order to account for uncertainty. Based on EPA 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 and DDOE's trash TMDLs for the Anacostia River watershed employ both an explicit and implicit MOS. An explicit MOS of 5 percent was incorporated into the Anacostia Trash TMDL. Since the TMDL requires 100 percent removal of the baseline load, the MOS was incorporated into LAs and WLAs as an additional 5 percent of the baseline load that must be removed, as indicated in Tables 5 through 8, above, to account for any uncertainty in establishing the baseline load. Additionally, conservative assumptions were incorporated into the TMDL allocations. The WLAs are conservative estimates of actual loads because they were calculated under the assumption that all land in the watershed (including nonpoint source lands, not regulated under NPDES stormwater permits) contributes to the point source trash load. The LAs are conservative estimates of actual loads because the entire stream length of all tributaries and the mainstem of the Anacostia were used in the calculation of the nonpoint source loads.

7) *The TMDLs have been subject to public participation.*

MDE and DDOE provided an opportunity for public review and comment on the trash TMDLs for the Anacostia River watershed. Public notices were published in the Montgomery County Examiner, the Prince George's County Examiner and the District of Columbia Register.

In addition, copies of the draft TMDL were made available at three public libraries within the watershed and through the MDE and DDOE websites. Finally, a public meeting was held on May 6, 2010, and a public comment period for this TMDL began on April 19, 2010 and ended on May 18, 2010. MDE and DDOE received eight sets of comments during this period. All of these comments were considered and addressed appropriately.

A letter was sent to the U.S. Fish and Wildlife Service pursuant to Section 7(c) of the Endangered Species Act, requesting the Service's concurrence with EPA's findings that approval of this TMDL does not adversely affect any listed endangered and threatened species, and their critical habitats.

V. Discussion of Reasonable Assurance

TMDLs represent an attempt to quantify the pollutant load that can be present in a waterbody and still ensure attainment and maintenance of water quality standards. The Anacostia River Trash TMDLs identify baseline loads, representative of typical annual trash loads to the watershed, and call for capture, prevention, and/or removal of 100 percent of the baseline loads, calculated as an average of the measured or estimated removal or capture rate. The reduction goal is distributed between both point and nonpoint sources of trash. WLAs are assigned to MS4, CSO, and otherwise regulated land uses and discharges and address trash items that can typically travel through a sewer system. The LA is assigned to larger trash and debris that are attributed to activities such as dumping. The reduction goals established by these TMDLs will be reached through NPDES permits to the identified point sources and the District of Columbia Water and Sewer Authority's Long-Term Control Plan (LTCP) for CSOs to achieve WLAs, and other source controls to achieve LAs.

When a TMDL is developed for waters impaired by point sources only, the issuance of an NPDES permit(s) provides the reasonable assurance that the WLAs in the TMDL will be achieved. That is because 40 CFR § 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available WLA" in an approved TMDL. Furthermore, EPA has the authority to object to the issuance of an NPDES permit that is inconsistent with WLAs established for traditional point sources, as well as more diffuse point sources such as permitted MS4 systems.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions.

As previously noted, the trash TMDLs for the Anacostia River watershed are expressed as the quantities of trash that must be captured, prevented from entering, or removed from the waterbody. Expressing the TMDLs in this manner allows for the use of a wide variety of best management practices (BMPs) to achieve the TMDL allocations. It is expected that entities assigned allocations in these TMDLs will develop methods to reliably and transparently quantify their capture, prevention and/or removal of trash from the watershed. The actual or estimated trash capture/prevention/removal rates achieved by each BMP will be used to assess compliance

with the TMDL allocations. As indicated by MDE and DDOE in the TMDL report (Section 6.5), potential BMPs that could be implemented to achieve the TMDL allocations include:

Structural BMPs

- Catch basin inserts
- End of pipe nets
- Floating trash traps/trash booms
- Vortex separation systems

Nonstructural BMPs

- Enforce existing regulations and ordinances that prohibit trash, litter, and debris
- Post signage indicating the penalties for littering and dumping violations
- Implement new regulations banning, controlling, or taxing certain materials known to significantly affect trash loading
- Implement return deposit fee for glass and plastic containers
- Increase prevalence of trash receptacles and increase trash collection frequency to keep receptacles from overflowing
- Continue street sweeping
- Establish more partnerships with business districts to improve litter removal efforts
- Recycling Programs
- Implement a reporting system for persons who observe illegal dumping or disposal of trash
- Stencil catch basins, indicating that storm drains lead to the Anacostia River
- Perform surveillance in known illegal dumping areas
- Implement trash-related community service as an alternative to environmental crime-related fines
- Conduct public education and outreach

In the case of the Anacostia Trash TMDLs, there is reasonable assurance that the goals of these TMDLs can be met with proper watershed planning, implementing pollution-reduction BMPs, and using strong political and financial mechanisms. The TMDLs can be achieved through a comprehensive, adaptive approach that addresses appropriate storm drain capture technologies, illicit dumping, and regulatory and voluntary approaches to trash removal and prevention.

In Maryland and the District of Columbia, there are several programs, policies and regulatory mechanisms available to ensure implementation of this TMDL. Cleanup efforts for the watershed began in the late 1980s with the signing of the Anacostia Watershed Agreement in 1987 by the District of Columbia; Montgomery and Prince George's Counties, Maryland; and the state of Maryland. In addition, the *Anacostia Watershed Trash Reduction Strategy* prepared by the Metropolitan Washington Council of Governments' Anacostia Watershed Restoration Partnership, outlines the extent of the trash problem in the Anacostia River, as well as the policy statements and strategies for implementing the six high-priority trash-reduction objectives. The six objectives, are to (1) significantly increase funding for trash reduction programs, (2) create and enhance regional partnerships and coordination among businesses, environmental groups, individual citizens, and government at all levels and in all jurisdictions, (3) improve people's

awareness, knowledge, and behavior relating to littering and illegal dumping, (4) promote the greater introduction and use of effective trash-reduction technologies and approaches, (5) improve enactment and enforcement of laws to reduce trash, and (6) increase trash monitoring-related data collection, generation, and dissemination efforts.

To compliment the *Anacostia Watershed Trash Reduction Strategy*, the Alice Ferguson Foundation brought attention to the trash-related problems in the Potomac River and its tributaries in March, 2005 through the *Potomac River Watershed Trash Treaty*, creating a forum for recognition of the problem, as well as a commitment to work towards solutions. The *Trash Treaty* had six founding signers, and has since gained a total of 140 signers with representatives from town, county, state and federal governments within the Potomac Watershed, including the Anacostia River.

The *Trash Treaty* commits the signers to achieving a “Trash Free Potomac” by supporting and implementing regional strategies aimed at reducing trash and increasing recycling; increasing education and awareness of the trash issue throughout the Potomac Watershed; and reconvening annually to discuss and evaluate measures and actions addressing trash reduction. The Alice Ferguson Foundation also convenes an Annual *Potomac Watershed Trash Summit* at which *Trash Treaty* signers and other stakeholders are able to collaborate on strategies for eliminating trash, as well as develop year-round problem-solving partnerships. The *Trash Treaty* and the *Trash Summit* demonstrate the commitment of political leaders and stakeholders to this issue and a willingness to collaborate on implementation of effective trash elimination strategies.