



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Richard Eskin, Ph.D., Director
Technical and Regulatory Service Administration
Maryland Department of the Environment
1800 Washington Blvd., Suite 540
Baltimore, Maryland 21230-1718

FEB 18 2011

Dear Dr. Eskin:

The U.S. Environmental Protection Agency (EPA), Region III, is pleased to approve *Total Maximum Daily Loads (TMDL) of Mercury for Cash Lake Watershed, Prince George's County, Maryland*. The Maryland Department of the Environment submitted the TMDL report to EPA for review and approval on September 28, 2010. The TMDL was established and submitted in accordance with Section 303(d)(1)(c) and (2) of the Clean Water Act to address mercury impairments as identified in Maryland's 2002 Section 303(d) List.

In accordance with Federal regulations at 40 CFR §130.7, a TMDL must comply with the following requirements: (1) be designed to attain and maintain the applicable water quality standards; (2) include a total allowable loading and as appropriate, wasteload allocations for point sources and load allocations for nonpoint sources; (3) consider the impacts of background pollutant contributions; (4) take critical stream conditions into account (the conditions when water quality is most likely to be violated); (5) consider seasonal variations; (6) include a margin of safety (which accounts for uncertainties in the relationship between pollutant loads and instream water quality); and (7) be subject to public participation. In addition, the TMDL considered reasonable assurance that the TMDL allocations assigned to the nonpoint sources can be reasonably met. The enclosure to this letter describes how the mercury TMDL for the Cash Lake watershed satisfies each of these requirements.

As you know, all new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL wasteload allocation pursuant to 40 CFR §122.44 (d)(1)(vii)(B). Please submit all such permits to EPA for review as per EPA's letter dated October 1, 1998.



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Decision Rationale
Total Maximum Daily Load of
Mercury for Cash Lake Watershed
Prince George's County, Maryland

A handwritten signature in cursive script, appearing to read "Jon M. Capacasa".

Jon M. Capacasa, Director
Water Protection Division

Date: 3-18-11

mercury loads attributed to the three permitted point sources in the watershed are assumed to have originated from atmospheric deposition as well. The fact that the TMDL does not assign WLAs to other point sources in the watershed should not be construed as a determination by either EPA or MDE that there are no additional sources in the watershed that are subject to the National Pollutant Discharge Elimination System (NPDES) program. In addition, the fact that EPA is approving this TMDL does not mean that EPA has determined whether some of the sources discussed in the TMDL, under appropriate conditions, might be subject to the NPDES program.

The TMDL developed for the mercury impairment in the Cash Lake watershed is presented in Tables 1 and 2. On average, the TMDL will result in a maximum daily load of approximately 0.2434 grams per day (g/day). Table 3 presents the annual and daily wasteload allocations assigned to the permitted point sources in the Cash Lake watershed.

Table 1. Summary of the Annual Average TMDL for Mercury in the Cash Lake Watershed

TMDL (g/yr)	=	NPDES Stormwater WLA (g/yr)	+	LA (g/yr)	+	MOS
88.83		9.77		78.86		Implicit

Table 2. Summary of the Maximum Daily TMDL for Mercury for the Cash Lake Watershed

TMDL (g/day)	=	NPDES Stormwater WLA (g/day)	+	LA (g/day)	+	MOS
0.2434		0.0268		0.2161		Implicit

Table 3. Permitted Facilities in the Cash Lake Watershed

MDE Permit #	Facility Name	Stormwater Permit Type	NPDES Group	WLA (g/yr)	WLA (g/day)
NA	Phase II Federal MS4	General Phase II MS4	Phase II	9.77	0.0268
96DP2831	National Wildlife Visitor Center WWTP	N/A	Phase I		
02SW0314	Sandy Hill Municipal Landfill	General Industrial Stormwater	Phase I		

The 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 the 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.

the TMDL endpoint of 235 µg/kg was determined to be approximately 39.82 percent. Through the use of the principal of proportionality, the 39.82 percent reduction was applied to the modeled baseline load of mercury in the Cash Lake watershed. The principal of proportionality assumes that within a given waterbody, a proportional reduction in fish tissue mercury concentration results in a proportional reduction in mercury loadings within a water body. Thus, the application of this principal was used to calculate a maximum allowable load for the Cash Lake watershed which equates to a maximum depositional load to the watershed that is 60.18 percent of the baseline load. This works out to about 88.83 g/yr for the entire watershed.

IV. Discussion of Regulatory Conditions

EPA finds that MDE has provided sufficient information to meet all seven of the basic requirements for establishing a mercury TMDL for the Cash Lake watershed. Therefore, EPA approves the mercury TMDL for the Cash Lake 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 antidegradation policy. There are no high quality, or Tier II, stream segments located in the Cash Lake watershed requiring the use of Maryland's antidegradation policy. The Designated Use for the Cash Lake watershed is Use I: *Water Contact Recreation and Protection of Aquatic Life*. (Code of Maryland Regulations, COMAR, 2010)¹.

MDE interprets the Use I Designation to be "suitable for ... fishing" or "fishable" (COMAR 2010d). These terms relate to the general populations ability to eat at least four meals per month of any single common recreational fish species from a given waterbody. The threshold concentration of fish tissue reflective of the consumption of four meals per month is 235 µg/kg for mercury. The risk assessment used by MDE to determine this concentration threshold incorporates the same risk level, reference dose and body weight and is consistent with the guidance adopted by EPA for the protection of human health from methylmercury, as described in *Water Quality Criteria for the Protection of Human Health: Methylmercury* (US EPA 2001)².

Samples of fish were taken from Cash Lake to assess the mercury concentrations in fish tissue. Trophic level four fish (Largemouth Bass) were targeted in the collection because they represent the top of the food chain (highest bioaccumulation potential) and provide a conservative estimate of the mercury dose associated with fish consumption in the lake. The water quality impairment in Cash Lake was determined to be due to

¹ COMAR (Code of Maryland Regulations). 2010a. 26.08.02.02 B(1). <http://www.dsd.state.md.us/comar/> (Accessed January 2011).

² USEPA. 2001. *Water Quality Criteria for the Protection of Human Health: Methylmercury*. Washington, DC: U.S. Environmental Protection Agency.

Wasteload Allocations

As indicated in the TMDL Report, the CALPUFF model was used to determine the major sources of mercury in the watershed. The major sources are as follows: 33.7 percent can be attributed to electrical generating units (EGUs) in-state; 28.5 percent attributed to out-of-state EGUs; 4.5 percent attributed to in-state non-EGU sources; 8.2 percent attributed to out-of-state non-EGU sources; and 25.2 percent to global sources. There are no individual industrial point sources in the Cash Lake watershed.

There is one wastewater treatment plant (WWTP) in the Cash Lake watershed and two urban stormwater dischargers. The mercury loads from the WWTP can be found in Appendix G of the TMDL report and are considered insignificant. The mercury loads from the two stormwater dischargers are assumed to have originated from atmospheric deposition since there are no EGUs located within the watershed. A WLA was calculated for the stormwater dischargers based on the proportion of urban land use in the watershed (11%)

The total WLA for mercury in the Cash Lake watershed is 9.77 g/yr. Table 3 presents the individual permitted point sources in the Cash Lake watershed.

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. There is no express or implied statutory requirement that effluent limitations in NPDES permits necessarily be expressed in daily terms. 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 Section 502(11). Unlike the CWA’s definition of TMDL, the CWA definition of “effluent limitation” does not contain a “daily” temporal restriction. NPDES permit regulations do not require that effluent limits in permits be expressed as maximum daily limits or even as numeric limitations in all circumstances, and such discretion exists regardless of the time increment chosen to express the TMDL. 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.*

EPA has authority to object to the issuance of an NPDES permit that is inconsistent with WLAs established for that point source. It is also expected that MDE will require periodic monitoring of the point source(s), through the NPDES permit process, in order to monitor and determine compliance with the TMDL’s WLAs.

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

Background pollutants, including atmospheric mercury deposition from sources outside the watershed, were considered in the TMDL development. Sources of mercury air emissions from beyond Maryland and even beyond the United States are believed to