

Willamette Basin Proposed Mercury TMDL

What is a TMDL?

A Total Maximum Daily Load, commonly called a TMDL, is required when a river, lake or stream does not meet state water quality standards and is listed on the federal Clean Water Act 303(d) list. A TMDL identifies the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards.

The Willamette River Basin is currently impaired for mercury and is listed on the 303(d) list. The TMDL identifies sources of mercury, and how much mercury needs to be reduced in order to meet water quality standards. The TMDL lists needed mercury reductions and the accompanying Water Quality Management Plan describes expected implementation through permits, best management practices, conservation practices, and other management strategies to reduce the amount of mercury entering streams. These actions are necessary to meet the mercury water quality criterion and, ultimately, restore the beneficial use of fish and shellfish consumption throughout the Willamette Basin.

Background

In September 2006, EPA approved DEQ's Mercury TMDL for the Willamette Basin. DEQ developed the TMDL to meet the mercury target, in place at the time, of 0.3 mg/kg (milligram of methylmercury per kilogram of fish tissue). In October 2011, EPA approved DEQ's methylmercury fish tissue criterion of 0.040 mg/kg, which was based on a more protective fish consumption rate of 175 grams/day. Subsequently, Northwest Environmental Advocates filed a lawsuit in 2012, which argued the validity of the 2006 mercury TMDL and EPA's approval of the TMDL.

In April 2017, the U.S. District Court issued a ruling requiring EPA to revise the TMDL by April 2019, while allowing the 2006 TMDL to remain in effect until EPA issues or approves the revised TMDL. In 2019, the court approved an extension until November 2019. EPA, with input from DEQ, led the technical work associated with modeling the amount of mercury gained and lost by stream systems, as well as modeling the concentration of mercury in the aquatic food web, which helped to identify links between fish exposure to mercury in the environment and mercury concentrations in fish. DEQ led the



development of the TMDL implementation planning process, which included convening an advisory committee to help identify ways to reduce mercury pollution and address load (unpermitted sources) and waste load (permitted sources) allocations.

Mercury in the environment

By far, the greatest source of mercury in the basin is from atmospheric deposition, which originates mainly from national and global sources. For example, mercury that is air deposited from industrial and coal burning power plant emissions. Once mercury is deposited on the landscape, the major pathways to streams are erosion of sediment-bound mercury and surface runoff.

Of the many different types of land use that exist within the Willamette Basin, forestry, agriculture and urban uses dominate the basin. Point source discharges contribute significantly less mercury to streams than nonpoint sources. Management measures for both point and nonpoint sources are described in the Water Quality Management Plan, with primary focus on reducing runoff and erosion from nonpoint source activities and urban stormwater.

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.



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TMDL scope

The TMDL and Water Quality Management Plan will cover the 11,478-square-mile area of the Willamette River Basin. Ultimately, the goal of the revised TMDL is to reduce mercury in the Willamette Basin to levels allowing safe consumption of fish and shellfish and meet water quality standards for the protection of aquatic life.

TMDL analysis

A Mercury TMDL defines the amount of mercury that can be added to a waterbody and still be protective of the waterbody. The TMDL analyzes the effects of point source discharges, nonpoint discharges, and natural background sources and allocates pollutant amounts among the sources.

The load allocations, or pollutant amounts that are assigned to the sources are part of the overall budget for mercury loading to a waterbody. For point sources, DEQ will address the allocations through the permitting process. For nonpoint sources, the load will be managed through a series of TMDL implementation planning and activities.

DEQ and EPA used a technical approach similar to what was used in the 2006 TMDL. The pathways that mercury moves through in the environment are complex, and it is difficult to fully represent all of its environmental pathways in models. However, the revised TMDL benefits from the inclusion of data collected since development of the 2006 TMDL. The technical approach is divided into three components as described below:

1. Watershed/mass balance model

Connects mercury sources to mercury levels in the river network. A watershed model, which uses the Hydrological Simulation Program - FORTRAN, will simulate movement of mercury via flow and sediment routing.

2. Food web model

Identifies links between fish exposure to mercury in the environment and mercury contamination in fish. Environmental mercury experts reviewed the food web model used in the 2006 TMDL for application in the revised TMDL. They found it remains representative of current science.

3. Mercury translator

Converts measurements of total mercury to dissolved methylmercury. Total mercury is one of the most commonly sampled forms of mercury and this translation allows greater use of total mercury data by providing reasonable estimates of dissolved methylmercury, which is the primary mercury form for fish uptake.

Water Quality Management Plan

The TMDL includes a Water Quality Management Plan that identifies strategies and approaches for accomplishing water quality improvements. The plan identifies local, state and federal governments, and private entities with responsibility for addressing pollution under their control. For this TMDL and Water Quality Management Plan, these entities are referred to as Designated Management Agencies or responsible persons. The plan also proposes management strategies designed to meet the allocations in the TMDLs and establishes a schedule for the submission of implementation plans.

Public process and participation

There are numerous opportunities for stakeholder participation in TMDL development and implementation. DEQ distributes information to the public through direct mailing to interested parties, and by posting on the Willamette Basin Mercury TMDL webpage at:

<https://www.oregon.gov/deq/wq/tmdls/Pages/willhgtmdlac2018.aspx>, and through our free email subscription service. To register for emails, visit <https://www.oregon.gov/deq/GetInvolved/Pages/default.aspx>

For questions regarding the TMDL process, public process, stakeholder list, and information posted on the Willamette Basin webpage, please contact DEQ Basin Coordinators, Andrea Matzke at 503-229-5350 or Priscilla Woolverton at 541-687-7347 or by email at matzke.andrea@deq.state.or.us, or woolverton.priscilla@deq.state.or.us

Alternative formats

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