

## Willamette Basin TMDL: Regulating and Monitoring Wastewater Discharges



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### **Overview of Total Maximum Daily Load or TMDL process**

When water quality standards for pollutants are not met, the federal Clean Water Act requires that DEQ determine a total maximum daily load (TMDL) for the pollutant of concern. This process determines how much of a pollutant can be added to the river without exceeding water quality standards and identifies the sources of the pollutant.

### **Willamette Basin TMDL pollutants**

The Willamette Basin TMDL was finalized in 2006 after extensive study. Maximum daily loads were developed for temperature, bacteria, and mercury because state water quality standards for these pollutants are often exceeded. Exceeding acceptable levels of these pollutants is a concern because waterways that are too warm will not support healthy salmon and trout; bacteria-contaminated water bacteria can cause illnesses in humans; and elevated levels of mercury in Willamette Basin fish have resulted in health advisories to limit the amount of fish that can be safely consumed.

### **Where are the pollutants coming from?**

#### ***Temperature***

Stream warming is influenced by a variety of factors. Treated wastewater is only one source of increased temperature. Others include: natural warming during summer months; removal of shade-producing trees and plants from stream banks; water diversions that reduce and slow stream flow; degradation of floodplain areas that provide cooler groundwater flow; and discharges of warmer water from reservoirs. DEQ has determined that treated wastewater discharges are a small part of the problem and temperature increases from these discharges are most apparent in smaller tributaries of the basin and portions of the Willamette River with lower flows.

#### ***Bacteria***

The bacterial pollution in the river is from a variety of sources including failing septic systems, storm water runoff containing animal feces from urban and agricultural lands, and sewer malfunctions. Treated sewage and industrial wastewater discharges are not the

cause of the bacteria exceedances in the basin, because DEQ requires that these discharges meet the bacteria standard at the point of discharge.

#### ***Mercury***

Preliminary analysis indicates that most of the mercury comes from erosion of soils containing mercury and runoff of atmospherically-deposited mercury. Using literature values from national surveys, DEQ estimated wastewater discharges are estimated to contribute about 4% of mercury to the basin.

### **DEQ regulations for wastewater discharges**

DEQ issues National Pollutant Discharge Elimination System (NPDES) permits to regulate discharges of treated wastewater from industrial processes and sewage treatment plants. These permits limit the amount of pollution that can be discharged and require that specific practices be followed to protect the environment. Permittees are also required to monitor discharges and report monitoring results to DEQ. DEQ reviews these monitoring reports and also conducts site inspections to ensure that permittees comply with permit requirements.

### **Temperature permit requirements**

The TMDL process determined how much warm water permittees can discharge to the Willamette River without increasing stream temperatures above state standards. The amount of warm water that each permittee can discharge is known as a “waste load allocation” and is based on the temperature and quantity of the discharge and the temperature and flow rate of the water body that receives the discharge. To implement the TMDL, DEQ will include these waste load allocations as permit limits when a permit is renewed. Permittees will also be given additional time to comply with their waste load allocations if needed.

### **Will giving permittees time to comply with their limits hurt the basin?**

No, because DEQ set aside a portion of the TMDL for permittees that need additional time to comply with their waste load allocation. This portion of the TMDL is known as the “reserve capacity.” As long as permittees stay within

their waste load and reserve capacity allocations and make progress towards reducing or offsetting their thermal load, DEQ expects continued improvement in the basin.

### **Why do permittees need time to comply with temperature requirements?**

Permittees need time to determine what improvements are needed to comply with their new limits and how to pay for improvements. There are no easy, low-cost fixes because most of these permittees discharge millions of gallons of treated wastewater twenty-four hours a day, seven days a week. There are several options for permittees to meet their temperature limits.

### **How can permittees meet their temperature limits?**

Permittees may make improvements to reduce their discharge temperatures or offset their thermal loads by making other improvements in the basin. Options include but are not limited to:

- *Conventional treatment technologies such as cooling towers or chillers.* Permittees that do not discharge large quantities of wastewater may consider these types of treatment technologies; however, this approach is probably cost prohibitive for permittees that discharge large quantities of wastewater on a continuous basis (e.g., sewage treatment plants) because energy costs to run the treatment equipment are too high.
- *Recycling or reuse of wastewater.* Permittees may find ways to recycle wastewater in their facility's process or reuse treated wastewater for irrigation.
- *Water quality trading.* Permittees may achieve the same or greater water quality benefit by improving stream temperature conditions in other ways, or participating in joint actions with water quality partners. For example, the permittee could prevent a stream from heating by planting trees to increase stream shade and prevent solar radiation from heating the stream; or the permittee could pay another party to use less water from the stream, thereby increasing stream flows and providing less time for water to warm.

### **Regulating mercury**

DEQ has not yet required permittees to meet specific waste load allocations because the way mercury travels in the environment is very

complex. DEQ is currently working with permittees to determine the type and amount of mercury in their discharges and develop a comprehensive strategy for reducing mercury contamination.

DEQ anticipates issuing a Mercury Monitoring Order by the end of 2007 that will require selected NPDES permittees to monitor their discharges for mercury. The permittees will include large industrial and sewage treatment sources, the three largest metropolitan areas (Portland, Salem and Eugene) with individual permits for their stormwater systems, and minor industrial sources with the potential to have mercury present in their effluent. Monitoring will occur over a two-year period.

The permittee monitoring data will be used to identify sources of mercury, improve the mercury TMDL modeling, and to assign waste load allocations if appropriate or needed. The data could also provide a baseline for evaluating effectiveness of mercury reduction efforts.

### **Can the public comment on Willamette Basin permits?**

Yes, DEQ provides an opportunity for public comment whenever it issues a new or renewed NPDES permit. To receive public notices, please sign up at: <http://www.deq.state.or.us/news/news.asp>. You may also review the most current public notices at: <http://www.deq.state.or.us/news/publicnotices/pn.asp>.

*For more information on specific permits, contact Mark Hamlin (503) 378-5319 or [hamlin.mark@deq.state.or.us](mailto:hamlin.mark@deq.state.or.us).*

### **Can the public comment on the Mercury Monitoring Order?**

Yes, the Mercury Monitoring Order is expected to be available for public comment in the fall of 2007. The order is expected to be issued to NPDES permittees in December, with monitoring to begin in 2008.

*For more information on the Mercury Monitoring Order contact Agnes Lut (503) 229-5247 or [lut.agnes@deq.state.or.us](mailto:lut.agnes@deq.state.or.us).*

### **Alternative formats**

Alternative formats (Braille, large type) of this document can be made available. Contact DEQ's Office of Communications & Outreach, Portland, at (503) 229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696.

