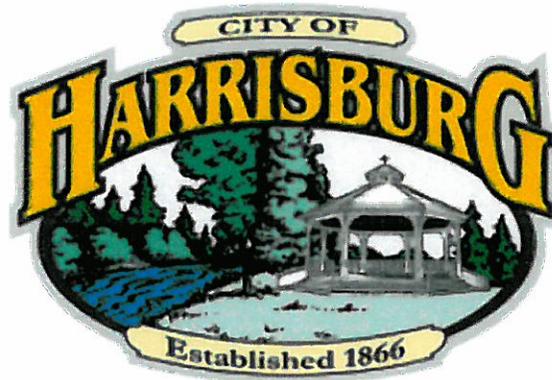


CITY OF HARRISBURG

**TOTAL MAXIMUM
DAILY LOAD (TMDL)
IMPLEMENTATION PLAN**



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SECTION 1 – INTRODUCTION

The Clean Water Act of 1977 authorizes the U. S. Environmental Protection Agency (EPA) to restore and maintain the physical, chemical, and biological integrity of all waters of the nation. In response to the Clean Water Act, the EPA designated state agencies to develop water quality standards, perform water quality monitoring to understand current conditions, determine sources of pollution, and develop Total Maximum Daily Loads (TMDLs) as a tool to improve water quality. As a component of the overall effort to protect and restore the beneficial uses of Oregon's waterbodies, the Department of Environmental Quality (DEQ) developed TMDLs for the entire Willamette Basin.

On September 21, 2006, the DEQ issued the Willamette Basin TMDL as an Order, and submitted it to the EPA for approval. The EPA approved the TMDL on September 29, 2006. The TMDL determines how much pollution can be added to the river without exceeding water quality standards.

DEQ has identified federal, state, and local agencies as Designated Management Agencies (DMA), as those agencies have authority to manage and regulate sources of pollutants listed in the TMDL. The City of Harrisburg has been identified as a DMA. The TMDL is an order that requires the City to develop its own implementation plan outlining actions the City will take to meet the requirements of the TMDL.

The Willamette Basin TMDL has determined that temperature, bacteria, and mercury pollution must be reduced. The DEQ Order requires each DMA to submit a TMDL Implementation Plan to DEQ by March 31, 2008.

This document is the TMDL Implementation Plan for the City of Harrisburg. This Plan describes the strategies the City will implement to reduce temperature, bacteria, and mercury pollution in the Willamette River.

This Plan is organized into four sections. This section introduces the Plan. Section 2 describes each of the three major pollutants addressed in the Willamette River TMDL. Section 3 explains what Harrisburg is currently doing to address water quality issues and points out gaps that exist in addressing TMDL parameters. Section 4 describes what the City plans to do to address TMDL issues. Section 5 discusses how progress will be measured in the implementation of the TMDL.

SECTION 2 – TMDL PARAMETERS

BACKGROUND

The Willamette River is a very important commercial, municipal, cultural, recreational, ecological, and aesthetic asset. Working to preserve and maintain water quality will ensure prosperity, productivity, and quality of life for the entire Willamette region now and in the future. The City of Harrisburg lies just east of the Willamette River.

On its way to the Columbia River, the Willamette passes the state's three largest cities. Current and future generations of Oregonians depend on the Willamette and its tributaries to provide water for drinking, industrial uses, sanitary functions, recreation, aesthetic enjoyment, fish and wildlife habitat, and many other purposes.

Functional water resources are essential to protecting the future health and prosperity of the Willamette Valley. The DEQ has set water quality standards for the waterways in the region to protect beneficial uses such as drinking, fishing, swimming, fish spawning, and irrigation. Streams, lakes, and rivers that do not meet these standards are included in the statewide 303(d) list of impaired waterbodies.

The TMDL process begins when a stream, lake, or river does not meet water quality standards and is classified as water quality-limited on the state's 303(d) list. TMDLs identify the maximum amount of a specific pollutant that can be present in a water body without violating water quality standards. This is known as the loading capacity. After extensive water quality monitoring and modeling efforts, TMDLs establish the difference between the loading capacity and the current pollutant load. TMDLs are expressed as numeric standards or percent pollutant reductions that need to be met to bring water bodies into compliance with water quality standards. The difference between the current load and the loading capacity is known as excess load.

The excess load is split up between the different sources of pollution according to their contribution to the overall pollution load. Any difference between the waterway's loading capacity and the current pollutant load must be mitigated by pollution reduction activities. The DEQ develops wasteload allocations for point sources such as wastewater treatment plants and industrial discharges. They develop load allocations for non-point pollution from agricultural, urban, and forestry lands such as erosion, animal wastes, and stormwater.

The Oregon Administrative Rule (OAR 340-042-0025) that addresses TMDLs requires local governments and other agencies designated as DMAs to develop TMDL Implementation Plans. According to OAR 340-042-0025, TMDL Implementation Plans must include the following five elements:

1. Management strategies that will be used to achieve load allocations

2. A timeline and schedule to achieve measurable milestones
3. A plan for periodic review and revision of the implementation plan
4. Evidence of compliance with applicable statewide land use requirements
5. Any other analyses or information as specified in the Water Quality Management Plan

TMDL PARAMETERS

Temperature, bacteria, and mercury are the three parameters that have been included in all of the Willamette Basin TMDLs. Although other parameters are included in subbasin TMDLs, these three pollutants are the major concerns throughout the entire Willamette Basin.

Following are brief summaries of these three TMDL parameters. The summaries below include basic information about the characteristics of the parameter, the potential sources of each pollutant, and a brief list of potential strategies to address each parameter.

Temperature

The temperature problem in the Willamette Basin is that the water is too warm at certain times of the year and poses a threat to cold water fish species such as salmon. This is known as thermal pollution. Removal or disturbance of streamside vegetation is the primary activity that negatively impacts stream temperature due to the loss of shade cover, but water temperature is also affected by erosion, loss of channel complexity, low streamflows, dams, and heated discharges from industrial or municipal operations.

The major sources of thermal pollution that the DEQ evaluated for the Willamette Basin temperature TMDLs are wastewater treatment facilities, dam and reservoir operations, and the loss of streamside vegetation. Point sources will continue to be regulated through the existing National Pollution Discharge Elimination System (NPDES) permit methods. Sewage treatment plants, as well as large industrial permitted discharges, will be allocated heat loads during the next renewal of their NPDES permits.

The focus of the non-point source temperature TMDL is to mitigate the removal or disturbance of streamside vegetation. The most effective way to minimize thermal pollution is by reducing the amount of solar radiation that reaches the water. This is accomplished by protecting and reestablishing vegetation along waterways to provide shade cover. Temperature benefits can also be realized through stream restoration projects including streambank stabilization, increasing stream flows, decreasing channel width, and restoring channel complexity.

The maximum temperature increase in the waters of the state from all human activities can be no more than 0.3 degrees Celsius (C). This was designated by the State of Oregon in Oregon Administrative Rule 340-041-0028. In the TMDLs, this allowance is known as the Human Use Allowance and is split up between various sources of human-caused thermal pollution. Models indicate that restoring shade cover to natural levels could reduce temperatures in the mainstem Willamette River by 0.5 degrees C.

The amount allocated to each source of thermal pollution varies by location, but, generally, non-point sources are allowed to contribute no more than 0.05 degrees C, point sources can contribute up to 0.25 degrees C, and the TMDL allocates 0.0 degrees C to the U.S. Army Corps of Engineers Willamette Project reservoirs. The DEQ factors in 0.05 degrees as a reserve capacity that will be set aside now to accommodate future growth by meeting the increased demand for industrial and municipal wastewater discharges. On average, waterways in the Willamette Basin need to receive 23 percent less thermal input than is currently being received.

The major implication of the temperature TMDLs is the protection and restoration of streamside vegetation. Examples of options to address thermal pollution include mechanisms such as:

- Develop materials that explain why landowners should preserve natural streamside vegetation
- Implement demonstration projects on public land to illustrate potential riparian management techniques
- Institute a riparian ordinance that prohibits the removal of native streamside vegetation
- Acquire critical streamside property
- Become involved in a water quality trading program

Bacteria

The Willamette Basin Bacteria TMDL states that urban areas must reduce their bacteria contributions by 80 – 94% to meet water quality standards. Bacteria violations of water quality standards are most common in creeks and streams that drain urban and agricultural land. The mainstem Willamette River is water quality limited for bacteria during high flows of the fall-winter-spring months, but is in compliance during summer low flows when there is the least amount of runoff. Above Willamette Falls, violations in the bacteria standards are usually single sample events that are related to high levels of precipitation and the resulting runoff.

The major sources of bacteria in the urban and rural residential areas are stormwater runoff, erosion, domestic and wild animal waste, failing septic systems, and municipal sewer overflows. Other sources of bacteria include livestock, irrigation runoff, and streambank erosion.

Local jurisdictions can focus on urban issues to ensure that the quality of water does not degrade due to current land use, population growth, and land use changes. Strategy options to address bacteria in the urban area include:

- Preventing erosion and controlling sediment from new construction
- Detaining and treating stormwater prior to discharge into waterways
- Keeping stormwater conveyance channels clear of organic matter
- Controlling animal waste
- Maintaining and restoring riparian buffers
- Encouraging better site design to decrease runoff
- Preventing non-stormwater and illegal discharges
- Developing stewardship and education programs to prevent pollution
- Street sweeping

Mercury

Mercury is a very complex pollutant. The way it acts in nature and the different forms it takes make it difficult to understand and accurately monitor. With no regard to local, state, or even international boundaries, mercury can be transported in the air after soil disturbance, automobile emissions, and industrial emissions across many miles and deposited by rainfall. Air deposition from emissions is one of the many ways that mercury moves through the environment. Some point sources, including timber processing plants and mills, discharge low levels of mercury in their wastewater effluent. Stormwater runoff suspends mercury molecules and carries them to waterways. Mercury is naturally occurring at low levels, but when native soil erodes at an accelerated rate those molecules are released in abnormal amounts. Mercury is also set in motion when sediment that has been deposited long ago is re-suspended due to high flows or a significant disturbance.

High mercury levels in the Willamette Basin have resulted in fish consumption advisories. To protect public health, especially that of pregnant women and young children, the Department of Human Services (DHS) has issued advisories recommending that people limit the amount of fish they consume from certain waterways. The DHS specifically advised against consuming large amounts of fish from the Willamette River, Coast Fork Willamette River, Dorena Reservoir, and Cottage Grove Reservoir due to the high levels of mercury.

Despite the uncertainty and complex nature of mercury, there are steps that can be taken to minimize the amount of mercury that is deposited in waterways and accumulated in the tissues of fish, wildlife, and humans. The goal of the mercury TMDL is to reduce mercury levels in the basin to a point where fish are no longer unsafe to eat.

To begin addressing the mercury problem in the Willamette Basin, the DEQ has developed interim allocations for point sources and non-point sources while they conduct more in-depth research. Instead of specific allocations, the DEQ calculates the interim mercury TMDLs

based on two categories: non-point and point sectors. The DEQ expects all non-point sources to begin implementing mercury reduction management strategies and policies. The TMDL will be revised in the future to be more specific according to the results of further research.

Implementation plans must include a mercury reduction strategy that includes feasible measures to minimize mercury runoff. DMAs have an array of options to reduce mercury pollution. Many of the management strategies that address mercury pollution also address bacteria and temperature. Potential management strategies include:

- Working with dentist offices to properly dispose of mercury wastes
- Establishing a stormwater plan
- Stormwater detention and treatment prior to discharge into waterways
- Establishing an erosion prevention and sediment control program
- Regular street sweeping and stormwater system maintenance
- Limiting land disturbance whenever possible

HARRISBURG

The City of Harrisburg is located along the east bank of the Willamette River. The City's population is estimated to be 3,400 as of July 1, 2007. The City has experienced rapid growth in the last 10 years and is expecting rapid growth in the years to come.

Consequently, adverse impacts to water quality as a result of this development may include increased impervious surface areas that may contribute more pollutants through the associated increase in runoff and loss of infiltration capacity. Development may also impact wetlands that provide critical ecological functions by filtering pollutants out of surface water prior to discharging into water bodies and providing riparian shading along temperature-impaired waters as described above. However, by implementing the strategies contained in this plan, the City of Harrisburg will greatly reduce adverse impacts to water quality within its jurisdiction. This plan will be reviewed periodically to ensure that the protective mechanisms are indeed addressing the growth issues in Harrisburg.

SUMMARY

Following are the basin wide reductions needed for each of the TMDL parameters:

- Temperature: 23 percent
- Bacteria: 80 – 94 percent
- Mercury: 26 percent

SECTION 3 – WATER RESOURCE ASSETS AND GAPS

The City of Harrisburg is already doing some things to protect and restore water quality. Additional actions are identified in this Implementation Plan that will continue to protect waterways and prevent further water quality degradation. Following is a discussion of the existing water quality related measures the City has undertaken (assets) and the areas where the City is lacking in water quality protection (gaps).

ASSETS

There are currently several water quality efforts underway in Harrisburg. Following are water quality related measures already in place:

- Pet waste pick-up program: The city has placed containers and plastic bag dispensers in park areas so pet owners can dispose of pet waste.
- Wastewater reuse program: The City irrigates all of its summertime wastewater effluent on 58 acres of Poplar trees.
- Leaf pick-up program: The City picks up leaves along the streets in the fall.
- Erosion/sedimentation control program: The City informs developers of developments larger than one acre of the requirement to obtain a 1200-C permit.
- Storm water detention program: The City requires new developments to provide storm water detention.
- Storm sewer flushing program: The City routinely flushes storm sewers and cleans manholes and catch basins.
- Street sweeping: The City routinely sweeps its streets to pick up sediment before it enters the storm drainage system.

GAPS

Some water quality gaps have been identified through a review of related water quality materials including the Willamette Basin TMDLs. Analysis of existing policies and programs indicates that Harrisburg should focus on protecting and restoring streamside vegetation and also increase efforts to minimize erosion. Some aspects of these efforts can be integrated into stormwater planning as well as other existing plans and programs.

Following are the focus areas of special concern for the City of Harrisburg:

- Riparian Protection and Restoration
- Education/Training
- Stormwater Planning and Management
- Erosion Control
- Animal Waste Management
- Illegal Discharge

SECTION 4 – IMPLEMENTATION STRATEGIES

The City of Harrisburg intends to implement strategies to reduce heat loads, reduce bacteria loading, and minimize mercury contributions to the Willamette River. Table 4-1, TMDL Implementation Tracking Matrix, lists the strategies the City intends to implement within the next five years. Following are descriptions of the major strategies to be implemented.

TEMPERATURE

The City will develop a riparian protection overlay and initiate a program to protect and enhance vegetation in the riparian areas. These areas would include the ditches that collect stormwater from the City's storm sewers on the north and south sides of the City. The storm drain on the west side of the City drains directly into the river without passing through a drainage area.

The City will work with property owners of private property to initiate riparian restoration projects. On City owned property the City will maintain existing vegetation and plant additional vegetation.

The City will continue its irrigation of Poplar trees with wastewater effluent during summer months so there will be no summertime discharges to the Willamette River. During winter months the City will maintain compliance with its NPDES permit when discharging to the river.

BACTERIA

The City has a program to aid pet owners in the pick up of pet waste. This program needs to be maintained and improved through signing and distribution of educational information. The City will also initiate efforts to enforce the program, through an ordinance, if necessary.

The City currently informs developers of developments larger than one acre that they are required to obtain a 1200-C permit from DEQ. The City reviews all development plans to confirm that the developers are in compliance with the permit. The City also requires that adequate measures be taken to avoid erosion on developments that are less than one acre. The City also requires that developers provide detention of storm water which will allow for sediment deposition. The City will continue to enforce these requirements to reduce the amount of sediment that enters the river.

The City will initiate a program to educate the public in regard to the importance of reducing bacteria levels. This will be performed using the City's website, by making information available at the front counter at City Hall, by including information with the water bills, including articles in a newsletter, and providing City employee training sessions.

The City will seek funding to update its Stormwater Master Plan. When the Plan is updated it will include water quality protection considerations and priorities.

The City currently chlorinates its wastewater effluent to keep bacteria levels in compliance with its NPDES permit requirements. The bacteria levels are monitored regularly. After disinfection the effluent is dechlorinated to reduce the adverse effect of chlorine byproducts on the river.

To address illegal discharges of wastes, the City will seek to partner with the local waste management company to hold an annual hazardous waste event in Harrisburg. These events will include educational material on proper hazardous waste disposal. The City will explore ways to encourage voluntary reporting of hazardous waste violations.

MERCURY

The primary source of mercury pollution in the river, that the City has some control over, is through erosion and sedimentation. Therefore, the measures discussed above for the reduction of bacteria pollution through erosion control are applicable to the reduction of mercury pollution.

SECTION 5 – MEASURING PROGRESS

The ultimate success of TMDL implementation activities will be measured by the de-listing of 303(d) listed streams throughout the Willamette Basin. Located along the upper portion of the Willamette River, Harrisburg has the opportunity to positively influence water quality and the de-listing of waterways throughout the downstream portion of the Basin. Those de-listings will occur once supported by water quality monitoring data at key points throughout the Basin. Those sampling activities are best conducted by entities with broad oversight and/or involvement rather than by individual jurisdictions like Harrisburg. However, if DEQ determines that a sampling site within the City of Harrisburg is important to an overall sampling program the City will support them in their efforts to establish a consistent sampling location.

For some strategies, such as planting trees along waterways, it may take years to reap the heat load reduction benefits sought. For others, such as strengthening the erosion and sediment control programs the City will see fairly immediate benefits in preventing further water quality degradation. Harrisburg recognizes that progress towards lowering pollutant loads will be best measured by tracking accomplishments towards implementing the strategies identified in this Implementation Plan. Target dates for having implementation completed are identified for each strategy in the Harrisburg TMDL Implementation Tracking Matrix.

The City of Harrisburg and the DEQ will periodically review the Implementation Plan and implementation progress. The Plan will be adapted as necessary. At the City of Harrisburg or DEQ request, the DEQ will meet with the City annually to review implementation progress and any barriers to implementation success. Every five years, a more comprehensive review will take place and the Plan will be adapted if necessary.

Every five years, the City of Harrisburg will provide the DEQ with a report documenting and tracking implementation activities. The report will contain a summary of accomplishments and any changes within the City that may influence how water quality management should be addressed. The report will contain a copy of the Implementation Matrix and indicate which strategies in the matrix were implemented. If there are strategies in the matrix that have not been completed within the targeted time frame, the City will provide an explanation as to why the strategy was not completed and an estimation of when the strategy will be completed or removed from the list of implementation measures.

The DEQ will conduct an evaluation of the success of the Plan including an assessment of progress made by the City, a review of existing water quality data, and other information to assess the effectiveness of the Plan relative to pollution reduction goals. The DEQ will provide the City with a report describing what information was used in the evaluation, the findings of the evaluation, and the basis of decisions related to the evaluation. If the evaluation indicates that the Plan is not likely to be adequate to meet pollution reduction targets, the DEQ will work with the City to adapt the Plan to meet these targets and a timeline for accomplishing new actions.

