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**City of Gervais**  
**TOTAL MAXIMUM DAILY LOAD IMPLEMENTATION PLAN**

April 28, 2010

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## **BACKGROUND**

### **Willamette River Basin Water Quality**

The City of Gervais is in the Molalla-Pudding Subbasin, one of the subbasins that make up the drainage basin of the Willamette River. Surface waters in this subbasin fail to meet several water quality standards, including established limits on bacteria, iron, pesticides and temperature. The broader Willamette River basin also fails to meet water quality standards for mercury.

The water quality standards were established to ensure that beneficial uses of the river and tributaries, such as swimming, fish consumption and fish rearing, are protected. When water quality standards are not met, the federal Clean Water Act requires a total maximum daily load (TMDL) to be established. A TMDL defines how much pollution can be added to the river without exceeding water quality standards.

On December 23, 2008, the Oregon Department of Environmental Quality (DEQ) issued the Molalla Pudding TMDL and submitted it to the U.S. Environmental Protection Agency (EPA) for approval. The DEQ developed a water quality management plan (WQMP) to describe the overall framework for implementing the TMDL. The WQMP describes activities, programs, legal authorities and other measures for which DEQ and other designated management agencies (DMAs) have regulatory responsibility. A DMA is “a federal, state or local governmental agency that has legal authority of a sector or source contributing pollutants, and is identified as such by the DEQ in a TMDL.”

The DEQ has named Gervais as a DMA in the Molalla-Pudding Subbasin because the City has legal authority within its city limits, and because the city’s stormwater drains to a tributary of the Pudding River. The tributary flows into the Pudding River at river mile 31.1. Under the TMDL, the City of Gervais must develop a non-point source TMDL implementation plan to address bacteria, temperature, mercury, pesticides, and iron in this unnamed tributary, which is informally referred to as the French Prairie Meadows Drainageway. This memorandum represents the required Molalla-Pudding Subbasin TMDL implementation plan for the City of Gervais.

## **City of Gervais Overview**

### ***Area Description***

The City of Gervais is in Marion County southwest of Woodburn (Section 26, Range 2 West, Township 5 South). Its current population is approximately 2,200. The City is in the center of the Willamette Valley, with elevations from 175 to 185 feet above sea level. The terrain is characterized by flat slopes with poorly defined drainage patterns. The predominant U.S. Soil Conservation Service soil types are Amity Silt Loam and Woodburn Silt Loam. Both types are classified in hydrologic soils group C, indicating a relatively impervious, poorly draining soil.



The area climate is a modified marine climate. Rainfall events typical of the area are large, intermittent frontal storms that move in from the Pacific Ocean. High intensity, short duration events are uncommon. The average annual precipitation is 40 inches, approximately 95 percent of which falls from November through June.

### ***Drainage Infrastructure***

The City's stormwater conveyance system consists of roadside ditches, pipes installed by the City over the years, pipe systems constructed with recent developments, and culverts installed with road projects. The pipes range in diameter from 6 inches to the 36-inch culvert under Black Walnut Drive.

Most of the City's stormwater runoff flows to a system of pipes and channels within the Hemlock Avenue right-of-way east of the railroad tracks, which discharges runoff to a channel through the French Prairie Meadows residential subdivision. Stormwater runoff from the area north of Douglas Avenue, including areas west of the city limits, is directed to this system. Several smaller systems serve the portion of the city south of Douglas Avenue. Two detention ponds on the east side of town have been constructed in the last 10 years with new developments. Figure 1 is a map of the City and its drainage outfall to the Pudding River.

### ***Water Quality Issues***

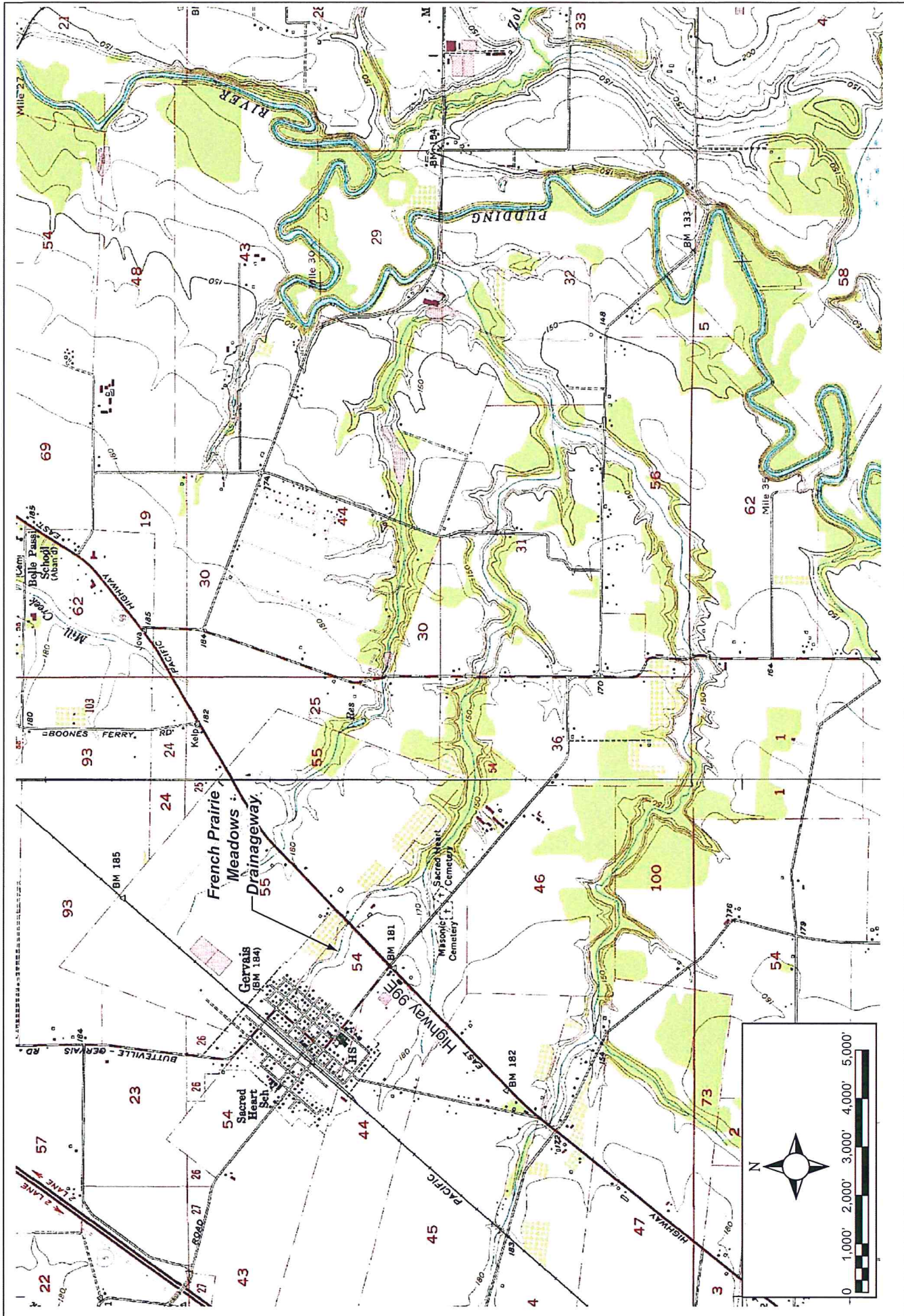
City programs to protect surface water and groundwater include infrastructure for drinking water, stormwater conveyance, and an intergovernmental contract with Marion County for review of building permits. The City operates two groundwater wells as its drinking water source.

A riparian corridor has been established for the French Prairie Meadows Drainageway, which maintains existing vegetation adjacent to the stream. The City recently adopted a Parks Master Plan that includes a regional park adjacent to this stream and two detention ponds. Establishment of landscaping for the park will be consistent with efforts for temperature reduction in the stream.

The City holds a National Pollutant Discharge Elimination System (NPDES) permit for discharge of treated effluent from its wastewater treatment plant to the Pudding River between October 1 and May 31. When the NPDES permit is up for renewal, DEQ will ensure that all TMDL issues for the treatment plant discharge are addressed in the renewed permit. The City may need to collect data at that time to assess the plant's contribution of iron to the Pudding River. Such efforts will be conducted as part of the permit renewal and therefore are not included in this TMDL implementation plan.

According to the Molalla-Pudding TMDL, pesticide contributions to the Pudding River are primarily from the Little Pudding River and Zollner Creek, although pesticide reductions are needed for all tributaries to the Pudding River. The City of Gervais will consider strategies for mercury and iron reduction as compatible strategies for pesticide reductions.





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**Figure 1.**  
CITY OF GERVAIS  
DRAINAGE OUTFALL TO THE PUDDING RIVER

City of Gervais  
**TMDL IMPLEMENTATION PLAN**

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## Implementation Plan Overview and Adoption

This Molalla-Pudding Subbasin TMDL implementation plan for the City of Gervais includes the following components required under Oregon Administrative Rules (OAR 340-042-0080.3):

- Identify the management strategies the City will use to reduce pollutant loading.
- Provide a timeline for implementing management strategies.
- Provide a plan for periodic review and revision of the implementation plan.
- Provide evidence of compliance with applicable statewide land use requirements.
- Provide any other analyses or information specified in the WQMP. For this implementation plan, these elements include the following from the Molalla-Pudding Subbasin WQMP:
  - Public involvement plan for strategy implementation
  - Fiscal analysis for resources needed to develop, implement and maintain plan
  - Steps to reduce mercury entering streams via erosion of sediments.
  - Stormwater control measures—DMAs with populations under 10,000, such as Gervais, are required to consider the following stormwater control measures to address nonpoint sources of bacteria and mercury, but are not necessarily required to implement all of them:
    - Pollution prevention in municipal operations
    - Public education and outreach on stormwater impacts
    - Public involvement in plan implementation
    - Detection and elimination of illicit discharges
    - Construction site stormwater runoff control
    - Post-construction stormwater management in new development and redevelopment.

This plan is due to DEQ by the end of June 2010. Following DEQ plan approval, the City Council will formally adopt the plan within 60 days.

## PARAMETERS OF CONCERN

Table 1 summarizes general information on each of the five parameters of concern for this implementation plan. Details of each are provided below.

### Temperature

At times, the Willamette River and its tributaries are too warm to support healthy salmon and trout. Some of these cold water fish, including lower Columbia coho, spring Chinook, winter steelhead, and bull trout, are threatened with extinction, and elevated stream temperatures have contributed to their decline. Warm water interferes with adult salmon and trout migration and spawning. It also decreases chances of juvenile survival, affects egg and embryo development, alters juvenile fish growth rates, and decreases the ability of cold-water fish to compete with temperature-tolerant fish species for habitat and food. Salmon and trout are also more susceptible to disease when water temperatures are warmest.

**TABLE 1.**  
**GENERAL INFORMATION ON WATER QUALITY PARAMETERS OF CONCERN**

Parameter	General Sources	Allocations/Reductions for TMDL	General Strategies
Bacteria	Bacteria is carried to waterways in stormwater, overland flow, and pipe systems	Nonpoint source land uses are allocated percent reductions ranging from 75% to 87% in the summer (June 1 – September 30) and 70% to 92% in the fall-winter-spring (October 1 – May 31).	Reduce inputs of bacteria by various means including riparian protection, erosion control and stormwater control and treatment, low impact development, various domestic and agricultural practices
Iron	Iron is naturally occurring, but high iron concentrations are associated with rain, high stream flows and bank erosion.	Nonpoint source land uses are allocated percent reductions based on stream flow, ranging from 19% to 96%.	Reduce sediment delivered to streams by various means including riparian protection, erosion control and stormwater control and treatment, low impact development.
Mercury	In-stream sediment from runoff and stream bank erosion	27% Reduction Willamette Basin-Wide	Reduce sediment delivered to streams by various means including riparian protection, erosion control and stormwater control and treatment, low impact development.
Pesticides	In-stream sediment from runoff and stream bank erosion	Nonpoint source load allocations for DDT and dieldrin that apply to the Pudding River and tributaries are percent reductions necessary to attain the human health (most conservative) criterion. 30% total DDT and 90% dieldrin. In-stream total suspended solids targets were developed for the Pudding River (15 mg/L).	Reduce sediment delivered to streams by various means including riparian protection, erosion control and stormwater control and treatment, low impact development.
Temperature	Removal of trees and other shade-producing woody vegetation from stream banks. Wastewater discharges also contribute to stream heating.	Nonpoint source load allocation is system potential shade (Surrogate percent-effective shade targets) and a heat load equivalent of 0.05 °C of the Human Use Allowance.	Increase effective shade through restoration and protections; restore natural stream hydrology; Increase natural stream flow

## Bacteria

People can be affected by bacteria in water when enjoying water activities such as swimming, wading, wind surfing, water skiing, boating or fishing. Ingestion or contact with water contaminated with bacteria can cause skin and respiratory ailments, gastroenteritis and other illnesses in humans.



## **Iron**

Iron is an element that occurs naturally in geologic materials. According to the EPA, iron is not considered a risk to human health, but it can cause taste, odor, color and staining problems in domestically used water. Oregon water quality standards for iron are designed to protect the most sensitive beneficial uses. Public and private domestic water are the most sensitive beneficial uses.

## **Pesticides**

Beneficial uses affected by the presence of pesticides are anadromous fish passage, drinking water, fishing (Human Health - Water and Fish Ingestion), and resident fish and aquatic life. The most sensitive of these is Human Health - Water and Fish Ingestion.

## **Mercury**

The accumulation of mercury in fish is an environmental problem throughout the United States. Mercury is a potent toxin that can cause damage to the brain and nervous system. Small children and developing fetuses are most sensitive to mercury's toxic effects. The primary way that humans are exposed to mercury is through the consumption of fish or seafood containing elevated levels of mercury.

## **MANAGEMENT STRATEGIES AND SCHEDULE**

The City's proposed management strategies for TMDL implementation are listed in the matrix shown in Table 2. The matrix also identifies the sources of pollutants addressed by each strategy and provides a general timeline for implementation. The City of Gervais' actions in the matrix support the necessary TMDL reductions. Most of the strategies are underway and considered ongoing. New strategies will be phased in over time, and ongoing strategies will be assessed for improvements.

## **MONITORING, REPORTING AND ADAPTIVE MANAGEMENT**

The City will monitor TMDL implementation activities and report to DEQ by June 30 of every year on annual progress and qualitative effectiveness. Monitoring document plan performance and progress. When applicable, the effectiveness of each management strategy in reducing pollutant loads will be assessed qualitatively and documented in the report. In addition to narration and illustrations, the matrix provided in Table 3 will be used to describe TMDL implementation activities for this annual report.

Gervais will evaluate this implementation plan for updates every five years following submittal. The evaluation will include a review of existing quantitative data (water quality data and other information) to evaluate the effectiveness of the plan relative to the pollution reduction goals. The five-year report will describe what information was used in the evaluation and the findings of the evaluation. If the evaluation indicates that the plan is not likely to be adequate to meet pollution reduction goals, the report will describe how the City will modify the plan or undertake other efforts to achieve the goals, and the timeline for accomplishing this. The five-year report will be due by June 30, 2015.

In addition to the annual and five-year reports, Gervais will review and revise this implementation plan as needed following any DEQ reevaluation of the TMDL.

**TABLE 2.**  
**MATRIX OF MANAGEMENT STRATEGIES FOR TMDL IMPLEMENTATION**

Management Strategy	Goal	Pollutant Source Addressed	Specific Actions	Results Monitoring	Timeline	Funding Source
<b>Management Strategies for Reduction of All Pollutants of Concern</b>						
Require stormwater detention and water quality measures with development	Reduce flows and contamination to predevelopment levels	Increased impervious surface with development	Require stormwater detention with new development in accordance with development code	Maintain records of detention and water quality facilities	Ongoing	Developer Funded
Solicit public input on TMDL implementation plan	Facilitate public involvement	N/A	Present TMDL Plan to City council and public	Document public outreach efforts and public input	2010	General Fund
<b>Management Strategies for Reduction of Mercury, Bacteria, Iron, Pesticides</b>						
Require erosion control for construction sites	Reduce construction site stormwater runoff	Erosion from construction sites	Require DEQ 1200C erosion control permit for more than 1 acre of soil disturbance; City enforced erosion control for smaller projects	Maintain records of 1200C permits submitted to DEQ	Ongoing	Developer Funded
Actively maintain French Prairie Meadows Drainageway	Reduce erosion along French Prairie Meadows Drainageway	Bank erosion due to high flows	Maintain vegetation along drainageway, remove debris as needed	Document existing conditions and riparian vegetation retained	Ongoing	Stormwater Fund
Require erosion control for City construction projects	Reduce sediment laden runoff from City projects	Erosion from City projects	Educate city staff about erosion control	Document staff training about erosion control	Ongoing	General Fund
Receive and respond to complaints regarding water quality problems (erosion; illicit discharge)	Eliminate illicit discharges	Domestic waste; erosion	Enforce nuisance control ordinance; Coordinate complaint with code enforcement	Maintain records of number of complaints handled, number of referrals	Ongoing	General Fund
Maintain maps of City stormwater and sanitary sewer systems	Eliminate illicit discharges	Illicit connections to sewers	Update existing maps periodically	Document all updates of system maps	Ongoing	Sewer Fund
Hold annual public cleanup day; continue ongoing cleanup by Public Works	Reduce debris in the drainage system	Contamination from trash and debris	Plan and publicize cleanup day	Document participation in Annual Cleanup Day; Document Public Works cleanup activities	Ongoing	Stormwater Fund





**TABLE 2 (continued).**  
**MATRIX OF MANAGEMENT STRATEGIES FOR TMDL IMPLEMENTATION**

Management Strategy	Goal	Pollutant Source Addressed	Specific Actions	Results Monitoring	Timeline	Funding Source
<b>Management Strategies for Reduction of Temperature</b>						
Enhance riparian vegetation along French Prairie Meadows Drainageway	Provide shading to reduce stream water temperature	Solar heating from lack of shade canopy	Install new vegetation and canopy with new park project	Document new riparian vegetation installation	When park is developed	General fund
<b>Management Strategies for Reduction of Bacteria</b>						
Install signs requiring cleaning up after pets in City park	Reduce pollutant loading to surface waters	Pet waste	Incorporate pet waste signage in new park	Maintain records of number and location of signs installed	When park is developed	General fund

## LAND USE COMPLIANCE

The management strategies proposed in this plan will be thoroughly cross-checked with the City's Comprehensive Plan to ensure compliance with land use requirements. Based on the review to date for the proposed management strategies, the TMDL implementation plan is consistent with the City's Comprehensive Plan. The management strategies can be implemented in a manner that complies with the statewide land use goals and be compatible with the provisions of the Comprehensive Plan. The City will evaluate and maintain consistency with local and statewide land use laws in any future actions related to TMDL implementation.

The management strategies are consistent with previous City planning documents and code as follows:

- The natural resources element of the City's Comprehensive Plan has identified the drainage channel through French Prairie Meadows west of Highway 99 to be a designated riparian area with natural area buffers on each side.
- The City code includes requirements for stormwater management for new development that are consistent with current best management practices, including stormwater detention, water quality facilities and erosion control.
- The City prepared a Stormwater Master Plan in 2000 that includes recommended design standards for drainage facilities that are consistent with current best management practices.
- The City code requires development to be in accordance with the current stormwater Master plan.



**TABLE 3.  
IMPLEMENTATION PLAN MONITORING AND UPDATING MATRIX**

Management Strategy	Specific Actions	Results Monitoring	Status of Accomplishments, Proposed Changes, Plans for Coming Year
Require stormwater detention and water quality measures with development	Require stormwater detention with new development in accordance with development code	Maintain records of detention and water quality facilities	
Solicit public input on TMDL implementation plan	Present TMDL Plan to City council and public	Document public outreach efforts and public input	
Require erosion control for construction sites	Require DEQ 1200C erosion control permit for more than 1 acre of soil disturbance; City enforced erosion control for smaller projects	Maintain records of 1200C permits submitted to DEQ	
Actively maintain French Prairie Meadows Drainageway	Maintain vegetation along drainageway, remove debris as needed	Document existing conditions and riparian vegetation retained	
Require erosion control for City construction projects	Educate city staff about erosion control	Document staff training about erosion control	
Receive and respond to complaints regarding water quality problems (erosion; illicit discharge)	Enforce nuisance control ordinance; Coordinate complaint with code enforcement	Maintain records of number of complaints handled, number of referrals	
Maintain maps of City stormwater and sanitary sewer systems	Update existing maps periodically	Document all updates of system maps	
Enhance riparian vegetation along French Prairie Meadows Drainageway	Install new vegetation and canopy with new park project	Document new riparian vegetation installation	
Install signs requiring cleaning up after pets in City park	Incorporate pet waste signage in new park	Maintain records of number and location of signs installed	
Hold annual public cleanup day; continue ongoing cleanup by Public Works	Plan and publicize cleanup day	Document participation in Annual Cleanup Day; Document Public Works cleanup activities	

## **WQMP REQUIREMENTS**

### **Public Involvement**

Public involvement will be included in the City Council review and adoption process for this plan and any subsequent updates. Once approved by DEQ, the current plan will be presented to the City Council for adoption within 60 days. Future changes to the plan will be presented to the City Council for review and approval. The City Council will review and approve annual and 5-year reports prior to submitting them to DEQ.

### **Fiscal Analysis**

To the extent possible, the selection of ongoing and new strategies is driven by the greatest opportunities for achieving pollutant reductions. The City has confirmed existing resources for maintaining ongoing activities into the future and determined what additional resources are necessary to develop, implement, and maintain the new management strategies over time. Funding resource limitations require that new strategies in the matrix be prioritized and phased in over time. The funding column in Table 2 identifies the source of funding that will be relied upon to implement each management strategy.

### **Mercury Reduction**

Strategies to reduce sediment entry into surface water are contained in the implementation plan matrix and will be implemented.

### **Consideration of Stormwater Control Measures**

Table 4 identifies stormwater control measures that relate to individual management strategies.





**TABLE 4.  
APPLICABILITY OF STORMWATER CONTROL MEASURES  
TO PROPOSED MANAGEMENT STRATEGIES**

Management Strategy	Pollution prevention in municipal operations	Public education and outreach	Public involvement	Illicit Discharge Detection & Elimination	Construction Runoff Control	Post- Construction Stormwater Management
Require stormwater detention and water quality measures with development						<b>X</b>
Solicit public input on TMDL implementation plan			<b>X</b>			
Require erosion control for construction sites					<b>X</b>	
Actively maintain French Prairie Meadows Drainageway						
Require erosion control for City construction projects	<b>X</b>					
Receive and respond to complaints regarding water quality problems (erosion; illicit discharge)				<b>X</b>		
Maintain maps of City stormwater and sanitary sewer systems				<b>X</b>		
Enhance riparian vegetation along French Prairie Meadows Drainageway						
Install signs requiring cleaning up after pets in City park		<b>X</b>				
Hold annual public cleanup day; continue ongoing cleanup by Public Works		<b>X</b>				