Multnomah County TMDL Implementation Plan for the Lower Willamette and Sandy River Basins

Submitted March 31, 2008

Water Quality Program
Land Use and Transportation Division
Department of Community Services
Multnomah County

Table of Contents

1.0 INTRODUCTION

Background

Several waterbodies in Multnomah County fail to meet State standards for water quality. These standards assure that beneficial uses of the waterbody, such as swimming, fish consumption, and aquatic life, are protected. When water quality standards are not met, the beneficial uses are *impaired*. The Federal Clean Water Act (CWA) requires the state to develop a list of impaired waterbodies every two years; this list is commonly referred to as the *303(d) list*, after the section of the CWA that requires it. Section 303(d) also requires that the state establish a Total Maximum Daily Load (TMDL) for those impaired waterbodies. A TMDL determines pollution load reductions for each pollutant in a waterbody and requires Designated Management Agencies (DMA) to reduce the pollutant loads with a clean-up implementation plan that addresses each pollutant.

In 2005 and 2006, the Oregon Department of Environmental Quality (DEQ) established TMDLs in the mainstem and tributaries of the Lower Willamette River and Sandy River, respectively. Reductions for several pollutants are identified in the TMDL, including bacteria, temperature, mercury, and the legacy pesticides, DDT and dieldrin. These pollutants are ubiquitous in the County's watersheds and come from diffuse sources. Multnomah County is identified as a DMA in these TMDLs for the portion of the watersheds within its jurisdiction.

The county has two distinct land use types: urban and rural uses. Expanding city jurisdictions within Multnomah County's urban area have substantially decreased the County's urban jurisdiction in recent years. As a result, many services related to water quality and land use protection have been transferred to the Cities of Portland and Gresham. The remaining rural areas of the County are dominated by timber harvest and agricultural activities, with some rural residential development. The County coordinates with State agencies that have oversight on timber and agricultural practices, and partners with many non-governmental organizations, such as watershed councils and Soil & Water Conservation Districts, on water quality issues with private landowners.

The County maintains responsibilities in land use planning, stormwater management, and public education within its remaining jurisdiction.

Goals and Objectives

The overall goal of Multnomah County's TMDL Implementation Plan is to prevent, reduce, and eliminate, wherever practicable, sources of pollution to protect and restore impaired waterbodies within the County's jurisdiction and authority. This plan describes a management strategy and actions for reducing pollutant loadings from point sources (Waste Load Allocations) and non-point pollution sources (Load Allocations) within the County's jurisdiction and authority.

The County's strategy includes land use planning, monitoring, interagency coordination, public education, and road maintenance operations. This plan builds on existing County plans and ordinances that provide water quality protection. These include the County's Stormwater Management Plan, East and West of Sandy River Plans, and County land use ordinances. Best Management Practices (BMPs) are the basis for the County's water quality program.

Multnomah County partners with many local and state agencies to fulfill its responsibilities towards water quality protection because pollution may arise from land management activities outside its jurisdictional authority. Interjurisdictional coordination, especially in the rural area, is important to achieve long-term water quality improvement.

This plan will be implemented through an adaptive process in order to integrate new information and plan evaluations over time.

2.0 WATER QUALITY ASSESSMENT

The Department of Environmental Quality developed TMDLs for 303(d) listed impaired streams in the Sandy River and Lower Willamette River, and their tributaries (Table 1). This plan specifically addresses the TMDL Load Allocations (LA) for temperature, bacteria, mercury, and two persistent pesticides, DDT and Dieldrin, in the portions of the Sandy River and Lower Willamette River basins within Multnomah County's rural jurisdiction. A WLA for bacteria from County-owned roads in the urban area are also addressed.

Within Multnomah County's jurisdictional area, the 303(d) listings fall within four sub-watersheds in the Lower Willamette, as well as the lower mainstem: Johnson Creek, Columbia Slough, Tryon Creek, and Springbrook Creek. Appendix A is a map of the TMDL subwatershed areas in Multnomah County under the Sandy River and Lower Willamette TMDLs. In the Sandy River basin, the Beaver Creek (and tributary Kelly Creek), Gordon Creek and the Sandy River mainstem sub-watersheds are 303(d) listed. Most of the County's jurisdiction is rural and agricultural land uses, however, there are pockets of rural residential development in each of the basins.

The sections below summarize the TMDL pollutants of concern and provide an assessment of water quality and impacts from various land uses for each sub-watershed. For a complete description of water quality, refer to the TMDL reports for the Lower Willamette River and Sandy River.

Temperature

The temperature TMDL is focused on meeting the rearing and migration criterion of 18º C for the protection of cold water salmonids. Elevated stream temperatures can induce increased fish mortality from a range of sub-lethal and lethal effects. The temperatures

in Multnomah County streams exceed the fish criterion and enter the sub-lethal limit (18 – 23º C/64 -74º F) during July and August, which cause increased exposure to pathogens, negative affects on fish metabolism (impaired feeding, reproductive, and growth), and decreased food supply.

Table 1. Water quality pollutants and TMDL reduction targets for streams within Multnomah County jurisdiction.

Pollutant	Waterbody	Reduction	*TMDL*
Temperature	Sandy River	Riparian shade	*Sandy*
	Gordon Creek	Riparian shade	*Sandy*
	Beaver/Kelly Creek	Riparian shade	*Sandy*
	Lower Willamette River	n/a[1]	*L. Willamette*
	Johnson Creek	Riparian shade	*L. Willamette*
	Tryon Creek	n/a	*L. Willamette*
	Columbia Slough	n/a	*L. Willamette*
Bacteria	Beaver /Kelly Creek	86% load reduction	*Sandy*
	Johnson Creek	78% load reduction	*L. Willamette*
	Springbrook Creek	n/a	*L. Willamette*
Mercury	Lower Willamette River	27% load reduction*	*L. Willamette*
DDT, Dieldrin	Johnson Creek	78% urban stormwater 94% nonpoint sources	*L. Willamette*

[1]n/a: not applicable. See details in plan regarding the particular conditions for each pollutant.
*phased TMDL. this is a guidance not a WLA

Lack of shading by riparian vegetation is one of the most significant factors influencing stream temperature in both the Sandy and Willamette basins. Effective shade is used as a surrogate measure for thermal load allocations.

Sandy River mainstem – One reach within the County (river mile 14.8 – 16.1) is identified in the TMDL where improvements in riparian vegetation could increase shade conditions. This reach consists largely of publicly-owned forest tracts. One parcel is privately owned.

Gordon Creek – Effective shade curves are provided in the Sandy TMDL to estimate shade potential. For small streams in the Willamette Valley Potential Vegetation Zone (near stream disturbance zone < 25'), the shade target is greater than 95%.

Beaver and Kelly Creeks - Effective shade curves are provided in the Sandy TMDL to estimate shade potential. For small streams in the Willamette Valley Potential Vegetation Zone (near stream disturbance zone < 25'), the shade target is greater than 95%.

Lower Willamette River mainstem – The five Willamette Bridges under County jurisdiction do not significantly influence temperature in the mainstem Willamette River.

Johnson creek – Channel modifications and widening (including instream ponds), reduction of summertime flows, and lack of riparian shading are significant factors affecting temperature for Upper Johnson Creek and its tributaries within the County's jurisdiction.

Tryon Creek – Although there are small pockets of unincorporated area in the Tryon Creek watershed, they fall under the City of Portland's land use planning authority through the Urban Planning Area Agreement.

Columbia Slough – Multnomah County jurisdiction includes the Interlachen residential area which does not contribute significantly to shading of Fairview Lake which drains to the Slough.

Bacteria

Bacteria, viruses, and other harmful pathogenic microorganisms in the water can cause illness for swimmers. The bacteria, *Escherichia coli* (E. coli), are used in Oregon water quality standards as an indicator for swimming (human contact) risks. Sources of pathogens in freshwater include sewage discharge, pet wastes, livestock, and wildlife. Urban and rural runoff is a significant conduit for transporting fecal waste to waterbodies.

The reduction of bacteria needed to meet water quality standards is based on local data specific to each waterbody where available.

Johnson Creek - A 78% reduction is calculated for Johnson Creek watershed and applies to all other tributaries in the Lower Willamette subbasin.

Springbrook Creek – Although there are pockets of unincorporated area in Springbrook watershed, they fall under the Westside pocket agreement with the City of Portland. The area is managed by the City of Portland through their stormwater management program.

Beaver and Kelly Creek – DEQ applied an average reduction of 86% on Beaver Creek based on measured samples. This reduction applies to both urban and rural land uses.

Mercury

Mercury is a potent neurotoxin that has the potential to cause permanent damage to the brain, kidney, and developing fetus. Mercury may be present in various physical and chemical forms in the environment; the organic form, methyl mercury, represents the most bioaccumulative form found in fish tissue, and it is the most toxic form of mercury for human consumers.

Mercury is a naturally occurring element in native soils, and soil erosion is a significant source in waterbodies of the Lower Willamette River basin, contributing nearly 48% of the total pollutant load. Atmospheric deposition is also a major source of mercury, contributing approximately 42% of the total. Other minor sources include mining operations (0.6%), wastewater treatment discharge (2.7%), and industrial discharge (1.2%).

DEQ is addressing this pollutant with limited data, however enough data is available to estimate the total mercury load to the Willamette River at 128.5 kg/yr. An estimated reduction of 26.4% of this load is needed to reduce the mercury levels in fish tissue to provide safe consumption of fish from the Lower Willamette River.

Lower Willamette River (including Johnson Creek) – DEQ is proposing an interim 'across the board' reduction of 27% (to account for new growth/sources) while more data is collected. Sources from the County's area include stormwater runoff from the five Willamette Bridges and soil erosion in the Johnson Creek rural headwaters.

DDT and Dieldrin

DDT (dichloro-diphenyl-trichloroethane) and Dieldrin are toxic organochlorine pesticides. Historically, DDT and Dieldrin were used extensively as agricultural insecticides and to control insect disease vectors such as mosquitoes. While DDT and Dieldrin were banned from use in 1972 and 1983, respectively, the concentrations of both pesticides in the environment (i.e., soil, water, tissue) still persist above water quality standards. Both are long-lived in soils, and by means of bioaccumulation, they are concentrated as they move up the food chain.

DDT and Dieldrin enter surface waters in Johnson Creek watershed primarily through the erosion and transport of soil. Both have a strong affinity for sediment, binding tightly to particles, and concentrations of these DDT are correlated to instream Total Suspended Sediment (TSS) and turbidity. DEQ identified TSS as a surrogate measure for DDT.

Johnson Creek – Data show that pesticide concentrations are highest in the upper watershed where rural land uses are dominant. However, stormwater from urban areas contribute through sediment transport. The reduction of DDT and Dieldrin in urban stormwater (77%) and non-point sources (94%) are needed to meet water quality standards. A TSS target of 15 mg/l was set as a surrogate for non-point sources.

3.0 PLAN JURISDICTION AND AUTHORITY

Multnomah County's TMDL implementation plan covers portions of watersheds identified as having polluted waters. The majority of the County's TMDL area is located in the rural areas of upper Johnson Creek and the Sandy River tributaries, Beaver Creek and Gordon Creek.

The County has jurisdiction over a very small area in the urban area. These areas are identified in the National Pollution Discharge and Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permits for the Portland and Gresham areas. Generally, the area includes five Willamette Bridges, the Interlachen neighborhood north of Fairview Lake, and several miles of arterial roads in Fairview, Troutdale and Wood Village. The County's Stormwater Management Plan defines the BMPs used to reduce pollutants in stormwater discharges covered by these permits.

The land use and road maintenance activities in the pockets of unincorporated urban land in the Portland and Gresham areas have been transferred to the respective cities in recent years. Metro's Urban Planning Area Agreement (1998) and the intergovernmental agreement with the City of Portland, known as the Westside Pocket Area Maintenance Agreement (1984), transferred urban planning activities, road maintenance and stormwater management to the City of Portland. The County transferred the maintenance of many of its roads to the City of Gresham in 1995; the remaining roads were transferred in 2006, pursuant to Senate Bill 1096.

The County maintains the authority over land use planning and stormwater management in the remaining unincorporated areas for this TMDL. Land management in the rural area outside the NPDES area is governed by Rural Area Plans, County land use ordinances and permits.

The County's major responsibilities can be summarized as follows:

- Public involvement and education
- Stormwater management in the NPDES permitted area and unincorporated rural areas
- Construction, operation and maintenance of arterial roads in Fairview, Wood Village and Troutdale
- Construction, operation and maintenance of Willamette River bridges
- Plan review for Right-of-ways in Westside pocket areas
- Land use planning and permitting in the Interlachen neighborhood of Fairview, and in the unincorporated rural areas
- Inspection and permitting of septic systems
- Riparian area management
- Toxic substance reduction in County operations

Existing County Plans related to water quality

Stormwater Management Plan

The County has maintained two NPDES MS4 Stormwater permits since 1995. The County's Stormwater Management Plan fulfills the requirements of the permit by implementing a comprehensive series of Best Management Practices to minimize erosion, sediment transport and illegal discharges from public road infrastructure and new development. The plan covers the following management areas:

- Public involvement and education
- Operations and maintenance
- Illicit discharge
- Structural controls
- New development
- Natural systems (Vegetation management)
- Plan management

Reports of implementation are submitted to the Oregon Department of Environmental Quality annually, and the BMPs are reviewed at end of each five-year permit cycle.

Areas under NPDES permit coverage include:

- Five Willamette River Bridges – the County maintains the Sellwood, Hawthorne, Morrison, Broadway, and Burnside Bridges across the Willamette River under the NPDES permit.

- Interlachen area – this is the neighborhood between Blue and Fairview Lakes consisting of residential development.

- Arterials in Fairview, Troutdale and Wood Village – the County maintains approximately 28 miles of arterial streets in the urban permit area. (Note: It is anticipated that the Troutdale and Wood Village arterials will be included in the Gresham/County NPDES permit when it is renewed in 2009)

The Stormwater Management Plan is also implemented in the rural County outside the NPDES permit area. The County maintains the drainage system, typically the culverts and roadside ditches, except those outside the County right-of-way. The County also retains land use development review and approval and design review of drainage systems in the rural County.

Rural Area Plans

Multnomah County's TMDL Implementation Plan for the Lower Willamette and Sandy River Basins encompasses two different rural land use plan areas referred to as the East of the Sandy River Rural Plan Area and the West of the Sandy River Rural Plan Area. Each of these two areas contains separate comprehensive plan policies which implement distinct zoning regulations tailored to meet the goals of the individual unincorporated rural area.

The East of Sandy River Rural Plan Area is mountainous, located between the Columbia River Gorge National Scenic Area and the southern County boundary in eastern Multnomah County. The area is generally characterized by natural and commercial timber forests, much of which is within the Mt. Hood National Forest. The western-most portion of this plan area contains a variety of land uses including forest, agricultural, rural

residential, and the Springville rural center. In 2002, the East of Sandy River Rural Plan Area contained 731 dwellings. Notable drainages in this plan area include the Sandy River, Big Creek, Howard Creek, Buck Creek, Gordon Creek, Smith Creek, Pounder Creek, Knieriem Creek, Latourell Creek, Trout Creek, Cat Creek, Thompson Creek, Bridal Veil Creek, Donahue Creek and Young Creek.

The West of Sandy River Rural Plan Area is less mountainous than the East of Sandy plan area and is typically characterized by rolling hills. The West of Sandy plan area is bounded on the east and north by the Sandy River, on the south by Clackamas County and on the west by the city limits of Gresham and Troutdale. The plan area encompasses approximately 9,610 acres. Two unincorporated rural communities, Orient and Pleasant Home, are located within this area. The plan area is characterized by rural agricultural land including nurseries, berry farms and pastures with rural style residential development common throughout the area. As of 2002, the West of Sandy River Rural Plan Area contained 1,234 dwellings. Notable drainages in this plan area include the Sandy River, Beaver Creek, Kelly Creek and Johnson Creek.

Zoning in both these unincorporated areas of the watershed requires that new parcels divided under current regulations meet relatively large minimum lot sizes, ranging from 5 to 80 acres in most cases. Over 90% of the land area in the two rural planning areas of the lower Sandy basin is zoned for either farm or forest resource use, with minimum parcel sizes of 20 to 80 acres. Due to these large parcel size requirements, partitions have become relatively infrequent.

Regulation of land uses and development is subject to rules promulgated by several entities, including the State of Oregon Department of Land Conservation and Development (DLCD), Oregon Department of Agriculture (ODA), Oregon Department of Forestry (ODF), Metro, and the County. As noted above, much of this unincorporated land is in either agricultural or forest use. Multnomah County is precluded from regulating any effects to water quality from farm or forest activities on these lands. The County does regulate development associated with other land uses such as new dwellings in these areas to protect water quality. As is the case with partitions, the amount of new development in these areas is relatively low due to the farm or forest resources zoning.

The plan for the West of Sandy River area also includes a Statewide Planning Goal 5 program to protect riparian corridors and wildlife habitat using a watershed approach that extends protection to intermittent streams. In this case, a Significant Environmental Concern (SEC) overlay protects riparian corridors, and a 200-foot riparian buffer or management area is set to minimize development impacts. The SEC overlay zone incorporates the Metro Title III provisions that require mitigation in the form of re-establishing or extending vegetated corridors as a condition of development approval. All ground disturbing activities (>10,000 square feet) associated with construction within 200-feet of a water body are regulated through the county's Grading and Erosion Control provisions.

The County has completed a Goal 5 riparian corridor protection plan on the east side of the Sandy River. In the East of Sandy River plan area, development of new residential uses within 150' of designated significant streams is prohibited, and other development is limited by the adopted policy. The County also has a Hillside Development Overlay zone in place county-wide. This zone requires geotechnical review for development in areas with slopes steeper than 25%, and includes vegetation protection and replacement requirements. Property on the east side is also subject to County grading and erosion control ordinances.

Through the Rural Area Plans, and implementing zoning rules, Multnomah County regulates the protection of streams and watersheds through specific requirements for Riparian Area Management on private and public property. Policies provide incentives, consistent with current zoning, for new development, which is compatible with and enhances significant streams and adjoining riparian habitat. The County does not own or maintain public lands with stream or riparian areas outside of the road right-of- way. Therefore, stream enhancement by the County is limited to the few access points within the right-of-way. However, the County regulates certain activities on public land, such as development in public parks, unless those activities are exempt, such as farm and forest use.

Toxics Reduction Strategy

The *Toxics Reduction Strategy* was adopted in May 2006 by both Multnomah County and the City of Portland as a plan for minimizing toxic substances of concern in government operations. The goal is to use the "precautionary principle" as a framework to replace toxic substances, materials or products of concern with viable least-toxic alternatives by 2020.

Multnomah County Organization

The TMDL Implementation plan is managed by the Water Quality Program within the Department of Community Services, Land Use, Planning and Transportation Division. Water quality protection is a function of several sections within the County organization:

- Land Use Planning
- Transportation Planning
- Road Engineering and Maintenance
- Bridge Maintenance and Engineering
- Code Compliance
- Sustainability

The Maintenance sections and Code Compliance section have a significant "on-the-ground" function, while Land Use Planning issues permits to prevent water quality issues. The County's Sustainability Program plays a role through implementation of the County's internal Toxics Reduction Strategy. Figures 2 and 3 show the organization of the County and the Land Use, Planning and Transportation Division, respectively.

Compliance with Land Use Requirements

Oregon has established a strong statewide program for land use planning, originally established in 1973. The foundation of that program is a set of 19 Statewide Planning Goals. The goals express the State's policies on land use and on related topics, such as citizen involvement, housing, natural resources (Goal 5) and water quality (Goal 6). Oregon's statewide goals are achieved through local comprehensive planning.

State law requires each city and county to adopt a comprehensive plan and the zoning ordinances needed to put the plan into effect. The local comprehensive plans must be consistent with the Statewide Planning Goals. Plans are reviewed for such consistency by the State's Land Conservation and Development Commission (LCDC). When LCDC officially approves a local government's plan, the plan is said to be "acknowledged." It then becomes the controlling document for land use in the area covered by that plan. As required by state law, Multnomah County has incorporated these planning goals into an overarching Comprehensive Plan for the county which provides generalized and coordinated policy statements interrelating all functional and natural system management programs. Part of the County's Comprehensive Plan includes the Rural Area Plans, which function as a decision making guide with regard to land use, capital improvements, and physical development (or lack thereof) of the community. These plans are tailored to meet the needs of the individual rural area.

The County has adopted Zoning Ordinances which codify the policies of the Comprehensive Plan. Multnomah County Code Chapter 35 applies to the East of the Sandy River Rural Plan Area and Chapter 36 to the West of the Sandy River Rural Plan Area. Chapter 37 provides the administration and procedures that shall be followed throughout the review process for both areas. Development Chapters 35 and 36 are very specific and provide minimum required best management practices that must be followed for various types of projects in order to assure protection of the identified natural resources.

As required by state law, Multnomah County's Comprehensive Plan has been reviewed and was acknowledged on July 24th, 1980 by the State of Oregon LCDC to be compliant with statewide planning goals. More specifically, The East of the Sandy River Rural Area Plan portion of the Comprehensive Plan was most recently updated and adopted by the Board of County Commissioners July 10th, 1997. Similarly, the West of the Sandy River Rural Area Plan was most recently reviewed and adopted by the Board December 12th, 2002. Below is a brief summary of the most relevant sections of the Comprehensive Plans and Zoning Ordinance as they deal with water quality impacts.

Water quality impacts are regulated through the County's Grading and Erosion Control (GEC) ordinance Chapter 29.330 *et seq.* for the East of Sandy River Area, and Chapter 29.350 *et. seq.* for the West of the Sandy River Rural Plan Area. These regulations are drafted to provide a buffer between ground disturbing activities and any water body,

Figure 2. County Organizational Chart (Shading indicates a significant role in TMDL implementation)

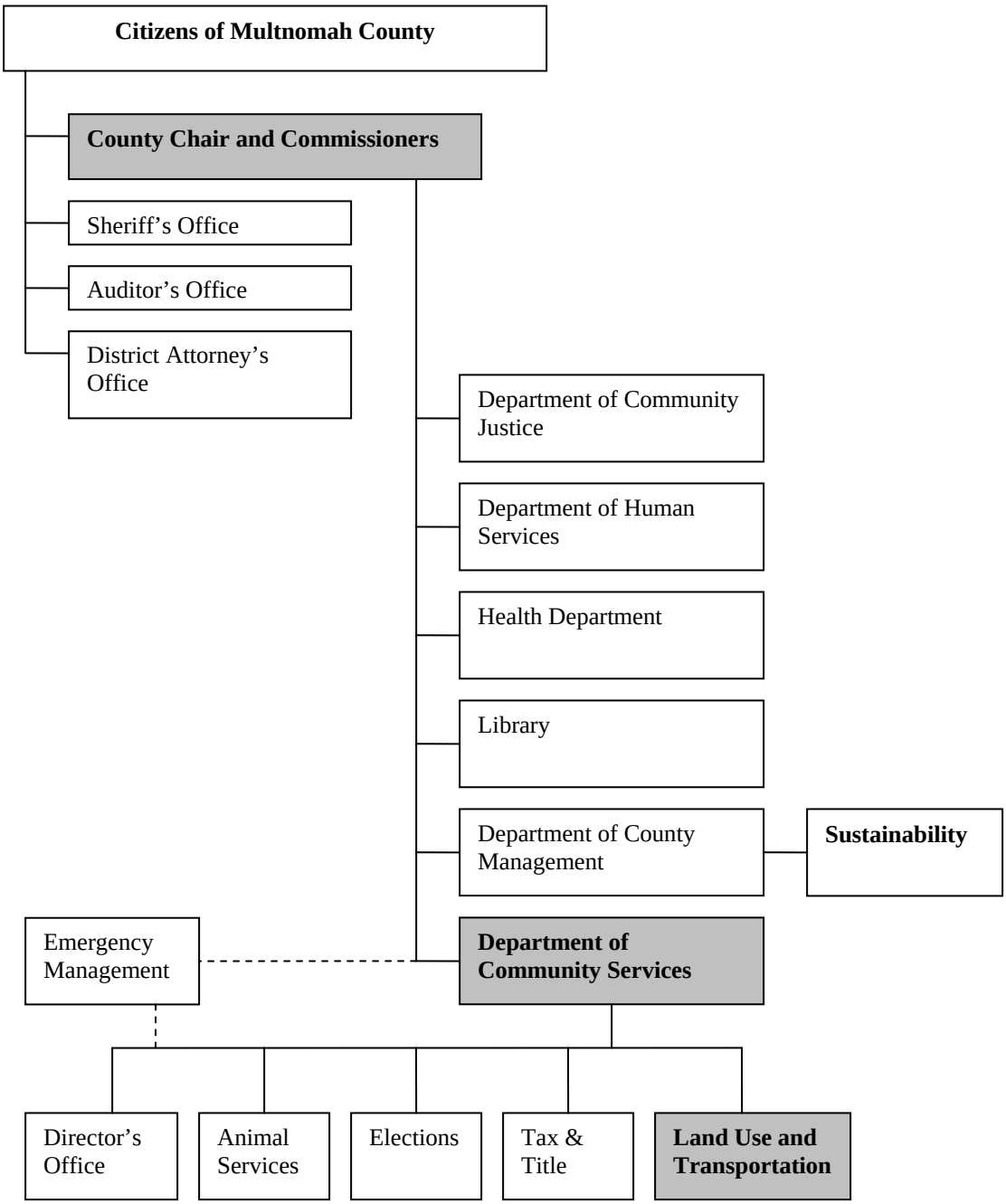
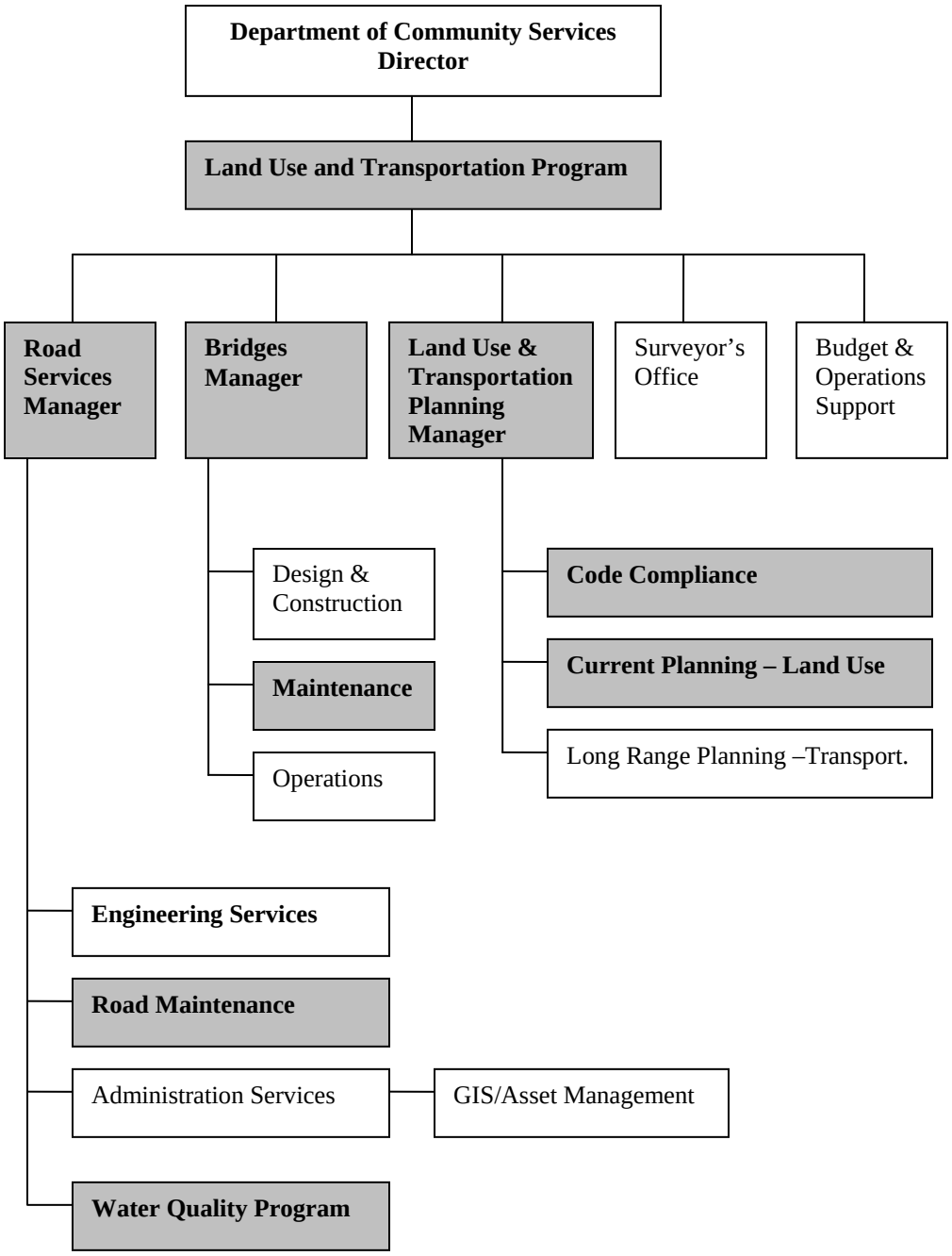


Figure 3. Land Use and Transportation Program Organizational Chart. (Shading indicates a significant role in TMDL implementation.)



minimize the area of soil disturbance, stabilize the site quickly and avoid off-site transport of turbid water or any effects of hydraulic scouring associated with the project.

Similarly, water quality impacts are also regulated through the county's Hillside Development (HD) ordinance Chapter 33.5500 *et. seq.* for the East of Sandy River Rural Plan Area and Chapter 36.5500 *et. seq.* for the West of Sandy River Rural Plan Area. In addition to considering water quality impacts much like the GEC ordinance, the HD ordinance also focuses on the effects of steep terrain on the construction project. Specifically, the effects of slope stability from a geotechnical perspective are evaluated within the HD permit. In addition to loss of life and property, slope failures can also create water quality concerns.

The purposes of the GEC and HD ordinances are, in part, to implement elements of Framework Plan Policy Number 14 (Development Limitations) and the Drainage Provisions of Plan Policy Number No. 37 (Utilities) – (MCC 29.3300/29.350 & MCC 33.5500/36.5500)

> *Policy 14*
>
> *The County's policy is to direct development and land form alterations away from areas with development limitations except upon a showing that design and construction techniques can mitigate any public harm or associated public cost and mitigate any adverse effects to surrounding persons or properties. Development limitations areas are those which have any of the following characteristics:*
>
> *A. Slopes exceeding 20%;*
> *B. Severe soil erosion potential;*
> *C. Land within the 100 year flood plain;*
> *D. A high seasonal water table within 0-24 inches of the surface for 3 or more weeks of the year;*
> *E. A fragipan less than 30 inches from the surface;*
> *F. Land subject to slumping, earth slides or movement.*
>
> *Policy 37*
>
> *E. Shall have adequate capacity in the storm water system to handle the run-off; or*
> *F. The water run-off shall be handled on the site or adequate provisions shall be made; and*
> G. *The run-off from the site shall not adversely affect the water quality in adjacent streams, ponds, lakes or alter the drainage on adjoining lands.*

Water quality impacts are also considered through the County's Significant Environmental Concern (SEC) ordinance Chapter 35.4500 *et seq.* for the East of Sandy River Area, and Chapter 36.4500 *et. seq.* The purpose of the SEC regulations are to

protect, conserve, enhance, restore, and maintain significant natural features which are of public value, including among other things, river and stream corridors, streams, lakes and islands, flood water storage areas, natural shorelines and unique vegetation, wetlands, wildlife and fish habitats, significant geological features, archaeological features and sites, and scenic views and vistas, and to establish criteria, standards, and procedures for the development, change of use, or alteration of such features or of the lands adjacent thereto (MCC 36.4500 *et. seq*.)

More specifically, in the East of Sandy Rural Plan Area, the SEC regulations protecting significant stream features require that the proposal enhance the protected habitat, requires subsurface storm water disposal (e.g., dry wells or other best management practice methods) and limits soil disturbing activities within a Stream Conservation Area to a period between June 15 and September 15 to minimize erosion/sedimentation potential (MCC 35.4575). In the West of the Sandy River area, the SEC regulations require an encroachment alternatives analysis to be performed if the use must encroach significantly into the protection area. Development standards require minimizing the removal of vegetation and a significant mitigation plan to be implemented to not only restore, but to enhance the riparian corridor (MCC 36.4555).

The purpose of the SEC ordinances are, in part, to implement elements of Framework Plan Policy Number 16D (Fish and Wildlife Habitat), 16E (Natural Areas) & 16G (Water Resources and Wetlands) - (MCC 35.4500 & 36.4500).

POLICY 16-D: Fish and Wildlife Habitat

It is the County's policy to protect significant fish and wildlife habitat, and to specifically limit conflicting uses within natural ecosystems within the rural portions of the County and sensitive big game winter habitat areas.

Strategies

A. *Utilize information provided by the Oregon Department of Fish and Wildlife to identify significant habitat areas, and to delineate sensitive big game winter habitat areas. If necessary, supplement this information with additional professional analysis to identify additional significant habitat areas and natural ecosystems within rural portions of the County.*

B. *Apply the SEC overlay zone to all significant habitat areas not already zoned Willamette River Greenway.*

C. *Include provisions within the Zoning Ordinance to review development proposals which may affect natural ecosystems within the rural portions of the County and sensitive big game winter habitat areas.*

POLICY 16-E: Natural Areas

It is the County's policy to protect natural areas from incompatible development and to specifically limit those uses which would irreparably damage the natural area values of the site.

Strategies

A. *Utilize information from the Oregon Natural Heritage Program to maintain a current inventory of all ecologically and scientifically significant natural areas.*
B. *Apply the SEC overlay zone to all areas not otherwise protected by Willamette River Greenway zoning or outright ownership by a public or private agency with a policy to preserve natural area values of the site.*

POLICY 16-G: Water Resources and Wetlands

It is the County's policy to protect and, where appropriate, designate as areas of significant environmental concern, those water areas, streams, wetlands, watersheds, and groundwater resources having special public value in terms of the following:

A. *Economic value;*
B. *Recreation value;*
C. *Educational research value (ecologically and scientifically significant lands);*
D. *Public safety, (municipal water supply watersheds, water quality, flood water storage areas, vegetation necessary to stabilize river banks and slopes);*
E. *Natural area value, (areas valued for their fragile character as habitats for plant, animal or aquatic life, or having endangered plant or animal species).*

4.0 MANAGEMENT STRATEGIES

Multnomah County fulfills its responsibility towards preventing and reducing water pollution with existing programs and policies, and by implementing county-wide BMPs and basin specific actions. Because the County's authority is limited by land uses and intergovernmental agreements for service, the County relies on partnerships with other DMAs and non-regulatory organizations to reduce pollutants and achieve its goal for water quality in impaired waterbodies.

In the rural areas, agriculture and forestry land uses predominate, and the County does not have regulatory authority. The regulatory authorities are the Oregon Department of Forestry (ODF) for forestry activities and the Oregon Department of Agriculture (ODA)

for agricultural practices. The County supports the state agencies by identifying potential regulatory violations through visual observations or water quality information. The Agricultural Water Quality Management Area Plans for the Lower Willamette and Sandy River Basins serve as the TMDL Implementation Plans for rural land uses.

To implement on-the-ground projects, the County relies on the partnership with the East Multnomah Soil & Water Conservation District (EMSWCD), which provides landowner assistance on BMP design and installation. The Sandy River Watershed Council and Johnson Creek Watershed Council also work with landowners in a similar capacity as the EMSWCD, with an emphasis on riparian restoration and education. For septic issues, the County partners with the City of Portland Sanitary program.

The following sections in this plan describe the pollutant sources and pollutant reduction strategies in detail, with attention given to the responsible parties within the county organization and partnering agencies. Appendix B is a detailed table of County implementation actions for each pollutant, including timelines for action.

Temperature

Solar Loading and Lack of Shade

Increased solar radiation from the modification and removal of native riparian vegetation is one of the causes of increased temperatures in Johnson Creek and the Sandy River and its tributaries. While there are no public lands along the riparian areas for which the County has responsibility (shade trees cannot be planted in the rights-of-way because safety concerns over sight distance), the County protects riparian areas in private land through land use development codes and ordinances. The County also partners with EMSWCD to identify restoration opportunities and inform landowners of the benefits of riparian vegetation and to take advantage of grant funding opportunities for restoration work.

Through the Rural Area Plans, the County implements protection of stream and watersheds through specific requirements for Riparian Area Management. Policies, and implementing regulations, attempt to reduce impacts to the natural resource by minimizing development encroachment towards the protected water body, by protecting existing riparian vegetation and requiring native landscape mitigation to not only offset impacts but to also improve the condition of the riparian corridor once the project is completed. The Hillside Development and Erosion Control (HD) Ordinance (MCC. 33.5500) requirements for new development require essentially a 100-foot setback from a riparian area for any land-disturbing activity in the Sandy Basin, whenever possible. The HD code provides riparian area mitigation standards that must be followed in the event a buffer must be disturbed.

Specific Best Management Practices referenced within these development regulations include the use of alternative development analyses (MCC 36.4555(A)-(C)), preservation of contiguous riparian area vegetation (36.4555(D)(3)), removal of existing nuisance

plants (36.4555(D)(6)), prevention of un-regulated storm water facility discharges into a stream (36.4555(D)(8) & 36.5520(A)(1)(d)) and compensatory mitigation plantings ranging from 1:1 – 2:1 (Natural Resource Creation : Natural Resource Degradation, 36.4555(D)(2)). In aggregate, these best management practices all have the effect of protecting and creating riparian area shade and reducing stream temperatures.

Bacteria

Septic Systems

A potential source of bacteria in the rural areas is failing on-site septic systems. Failing systems are both a health hazard and a potential environmental hazard and, as such, are a high priority for the County to address. The City of Portland administers the On-Site Septic System Program for the County to assure proper installation, maintenance and repair of septic systems in Unincorporated Multnomah County. The goal of the program is to prevent and report failures and to have properly functioning systems throughout the County. For the TMDL, the goal is zero discharge from this source.

The County will begin coordinating bacteria monitoring in suspected steam reaches identified in the TMDL study with DEQ and the City of Gresham to support the Sanitarian inspections. The County will also solicit volunteer data collection by Reynolds School District Natural Resources Academy and local watersheds councils to facilitate outreach on this issue.

DEQ is collecting bacteria data (2007-2008) at several stream reaches of Johnson Creek as part of the effectiveness monitoring for the ODA Agricultural Water Quality Management Area Plans for the Lower Willamette. The County will follow up this monitoring effort with data and mapping analysis to identify suspected septic failure at a site level to initiate site visits to confirm system failure.

The public or other local agencies may also refer a suspected system to the Sanitarian for investigation. The process is similar for adjacent property owners suspecting failed systems based on problems with odors, discharge onto their properties, water bodies or roadside ditches.

Once a site visit has been performed to assess the situation and, if necessary, potential solutions and steps for needed correction are identified, then a process for implementation is established. Time frames for repair are discussed with the property owner and the length of time allotted to repair is determined based on the severity of the problem. Discharges to the ground surface and into waterways are not allowed and are given as short a time as feasible for construction of repairs or alternatives. Alternatives are discussed limiting the usage of the septic system (timing of laundry, for example) until the problem is resolved. The City of Portland is responsible for enforcement of unresolved septic system failures.

Livestock and agricultural practices

Small farms incorporate an assortment of agricultural practices. These agricultural activities are under the jurisdiction of the ODA's Agricultural Water Quality Management Plans. The County does not have authority over agricultural practices; however, we coordinate between our agencies. As we are notified of problems by the public or find related issues to agricultural activities during routine road maintenance, we contact the ODA with this information. The County's Land Use Planning (LUP) staff coordinates with the EMSWCD to address joint issues of concern and suspected water quality problems. LUP distributes public information materials for the EMSWCD at the LUP office.

Multnomah County participated in the development of the Lower Willamette Agricultural Water Quality Management Area Plan. The County continues to coordinate with the EMSWCD and ODA on bacteria monitoring to identify problem areas, as mentioned above.

Pet waste

Pet waste is known to be a significant contributor of fecal bacteria. As this is a regional issue, the County coordinates with the Coalitions for Clean Rivers and other regional efforts for the development of educational materials and outreach to the public. The County works with EMSWCD to disseminate materials to local landowners and the general public within the County's jurisdiction.

Illegal Dumping

Illegal dumping of garbage and yard debris may be a source of bacteria. Storm runoff may flow through the material carrying pollutants with it, including bacteria. Illegal dumping is addressed in several ways within the Land Use and Transportation Division. One goal of programs addressing illegal dumping is to remove illegal dumps within the County and thereby remove solid waste as a potential source of pollution to County waterbodies, including the Sandy River, its tributaries and Johnson Creek.

The County's Road Right-of-Way Inspectors and the Sheriff's Nuisance Code Enforcement officer monitor the right-of-way for illegal dumping. Once alerted, Transportation road maintenance supervisors address non-hazardous dumping with assistance from the Sheriff's Office In-mate work crew program. Hazardous materials are handled through a private environmental response firm.

Illegal dumping on private property is covered under the solid waste nuisance ordinance that is administered and enforced by Multnomah County Vector and Nuisance Control. Information and notification of illegal dumping may be reported to Code Compliance for further action. Code Compliance implements the ordinance on a priority basis.

Mercury, DDT and Dieldrin

Erosion from non-point sources (agricultural Areas)

The County does not have authority to regulate agricultural practices, and relies on the authority of ODA and technical assistance from EMSWCD to reduce erosion on agricultural lands. The County routinely inspects activities in the right-of-way, and notifies ODA of any potential problems.

Erosion and runoff from roads and urban areas

As described in Section III, the County's Stormwater Management Plan contains a comprehensive suite of BMPs to reduce erosion and sediment transport from road maintenance and new development. The BMPs likely to influence the transport of toxics into waterbodies are presented in Appendix A.

Some detail on the most significant actions is presented below. For more information on the Stormwater Management Plan and the NPDES Stormwater Permit, contact the County Water Quality Program.

- Ditch Maintenance

  County roadside ditches are a potential conduit for pollutants in County waterbodies (county-wide), including the Sandy River and its tributaries and Johnson Creek. The County's Transportation Division funds the maintenance of the County roadside ditches within the Sandy Watershed. The goal of this program is to ensure that road ditches function as required for conveyance and do not add pollutants to waterways.

  Transportation Maintenance has adopted routine maintenance BMPs to allow the ditches to function as intended and reduce erosion from the ditch. The BMPs incorporate reseeding ditches with dwarf native grasses to reduce frequency of mowing and reduces excess vegetation that might otherwise be transported to the tributaries and ultimately the Sandy River.

  Maintenance staff also uses a Vactor ™ truck to remove debris and sediment from ditches by vacuum, wherever possible. This practice reduces the erosion potential of scalping the ditch with blades. A variety of erosion control practices are utilized in the ditch channel areas devoid of vegetation to prevent erosion, including check dams using bio-bags.

- Bridge maintenance

  Stormwater treatment devices have been installed on the Broadway and Burnside bridges in recent years as capital improvements were made. The devices use filter cartridges to remove sediment and are maintained by the Transportation Division.

The City of Portland cleans the conventional catch basins on the bridge spans and also provides street sweeping services.

- Erosion Control from new development and redevelopment

  The Hillside Development and Erosion Control Ordinance (MCC. 33.5500) requirements for new development require essentially a 100-foot setback from a riparian area for any land-disturbing activity in the Sandy Basin.

  The Grading and Erosion Control Ordinance (GEC) applies for most "ground-disturbing activities" through plan review and inspections. The County Planning Division requires Hillside Development (HD) or GEC Permits for grading, clearing or fill on any sites within its jurisdictional authority.

  HD and GEC Permits standards require temporary and permanent erosion control and water quality protection during construction stages and for long term site stability and mitigation. Inspections are performed by Land Use Planning staff for large grading projects and Right-of-Way inspectors perform inspections for the "minimal impact" projects. Each inspection receives either a pass or fail.

  An erosion control review is required by the County whenever:

  - 10,000 square feet of ground disturbing activity, or
  - Areas disturbed < 200 feet from top of bank of watercourse, or Pre-development slopes are > 10 % , or
  - Post construction; unsupported slopes > 33% that exceed five feet in height.

Mercury reduction from County Operations

Through the Toxics Reductions Strategy, a program developed jointly with the City of Portland, several actions are currently implemented to reduce mercury from County operations. The County will begin purchasing alternative products that contain less or no mercury, including low-mercury fluorescent lamps and mercury-free thermostats and switches in vehicles and equipment. The County will also recycle products containing mercury, including all mercury-containing light tubes and non-alkaline batteries, and ensure best management practices be followed for the recycling of electronic waste. In addition, County dental clinics are currently installing dental amalgam separators to prevent mercury disposal into the wastewater stream, ahead of the required deadline.

5.0 MONITORING AND REPORTING

The implementation plan will be reviewed as new information or data become available. The plan will be updated, as necessary, to reflect changes in strategy based on this new

information. A report of this review and a revised plan will be submitted to DEQ every five years from the date of submittal, in addition to an annual implementation report.

Implementation monitoring

Implementation of this plan will be tracked using the Plan matrix (Appendix B). A narrative of water quality data analysis, follow up investigations, and resolutions will also be prepared for the annual report. For BMPs included in the Stormwater Plan, those efforts will be documented in the NPDES annual report.

Effectiveness monitoring

The County will coordinate monitoring with other agencies to avoid redundancy in in-stream monitoring. The Cities of Portland and Gresham currently conduct water quality monitoring and assessment as required by their respective NPDES Stormwater Permits. As a co-permittee on both NPDES permits, the County partners with its larger jurisdictions to fulfill the monitoring requirement. Monitoring plans will be reviewed cooperatively with the city jurisdictions to fulfill the monitoring needs for this TMDL plan.

In the rural area, the County's monitoring needs largely overlap with the Agricultural Water Quality Management Area Plans (AWQMAP) by ODA. DEQ will provide the baseline monitoring during 2007-2008 for the AWQMAP in the Lower Willamette River. The County plans to review DEQ baseline data, and follow up with an investigative monitoring approach, which will include reach scale monitoring. Long –term sampling sites will be established as a result of the investigation.

The City of Gresham will conduct ambient water quality monitoring on Beaver Creek through an intergovernmental agreement with the County. Further investigative monitoring may be discussed among the partnering agencies in the Sandy River Basin AWQMAP process, including the Clackamas Soil & Water Conservation District, and volunteer efforts, such as the Reynolds Natural Resource Academy. Future monitoring plans will be developed in conjunction with ODA, watershed councils, and NPDES Co-permittees.

Reporting

The County will submit the annual TMDL report in conjunction with the annual NPDES report. The County will use the existing reporting mechanism for the NPDES Stormwater Permit for annual reporting of stormwater BMPs. The County provides annual reports to DEQ for the Portland and Gresham NPDES Stormwater permits, which includes detailed reporting on each BMP. For stormwater BMPs in areas outside the NPDES permit area, the County will include those activities in the NPDES reports. The TMDL report will include non-point source pollutants, temperature and bacteria.

Reports of septic system inspections and violations can be found in the City of Portland NPDES annual report.

Adaptive management

The County intends this plan to be mutable based on adaptive management. The effectiveness of this plan relies on the effective the coordination of partnering agencies to reduce pollutants in the TMDL waterbodies, and a review of environmental and programmatic data and information. The County seeks to use and share information with partnering agencies and consider their feedback in revising or modifying actions in this plan. The adaptive strategy will increase plan effectiveness, efficiency, and cost-effectiveness, while working toward achieving pollutant reductions.

6.0 PLAN MANAGEMENT AND FISCAL ANALYSIS

This TMDL implementation plan will be managed through the Water Quality Program of Multnomah County, a newly created program within the Department of Community Services, Land Use and Transportation Division. It is responsible for assisting Division managers and staff with program development and implementation which address state and federal water quality programs including compliance with the Endangered Species Act, NPDES permit for stormwater, and the Sandy River Basin and Lower Willamette TMDL.

Existing funding for the Water Quality Program consists of one full-time staff, GIS mapping resources, limited water quality monitoring, and additional programmatic costs. The program coordinates water quality protection extensively within County departments, local jurisdictions within the County and with non-governmental organizations to share resources, particularly for water quality monitoring and education efforts. Inter-jurisdictional funding agreements are already established with the following organizations:

- City of Gresham
- City of Portland
- Johnson Creek Watershed Council
- West Multnomah Soil & Water Conservation District
- East Multnomah Soil & Water Conservation District
- Sandy River Basin Partnership

Future funding needs

County Transportation funding solely consists of a portion of State Motor Vehicle funds and a portion of a County gas tax, this combination is known as the Road Fund. Multnomah County faces a structural deficit in its Roads and Willamette River Bridge programs. Revenues are essentially flat since the three cent County gas tax enacted in 1993 was not indexed for inflation. Costs for maintaining aging infrastructure continue

to increase and current debt obligations prohibit the County from leveraging its limited road funds to compete for other state and federal funds.

The County is responsible for nearly 300 miles of roads in the urban area (Fairview, Troutdale, and Wood Village) and the unincorporated areas of the County. The cost to maintain and improve the roads is $515 million for the next 20 years. We expect approximately $187 million in federal, state, regional and local funds leaving us with a shortfall of $328 million for road maintenance and capital projects. In addition to repairing badly deteriorated pavement and addressing opportunities for water quality retrofits, the County also has a number of intersection improvements and bicycle and pedestrian facilities to improve to increase safety as well as bringing a number of roads up to urban standards.

The County operates and maintains six bridges over the Willamette River. The cost to keep the Willamette River Bridges operating for the next 20 years is $616 million (in 2007 dollars). The County can realistically expect $131 million in local and federal funds over the next 20 years. That leaves us with a $485 million shortfall for bridge maintenance and capital projects.

On the positive side, the County does incorporate water quality treatment in road or bridge rehabilitation projects as opportunities arise. As the County completes several capital projects in the next few years with previously secured funding, water quality treatment will be included in project design.

7.0 PLAN SUMMARY

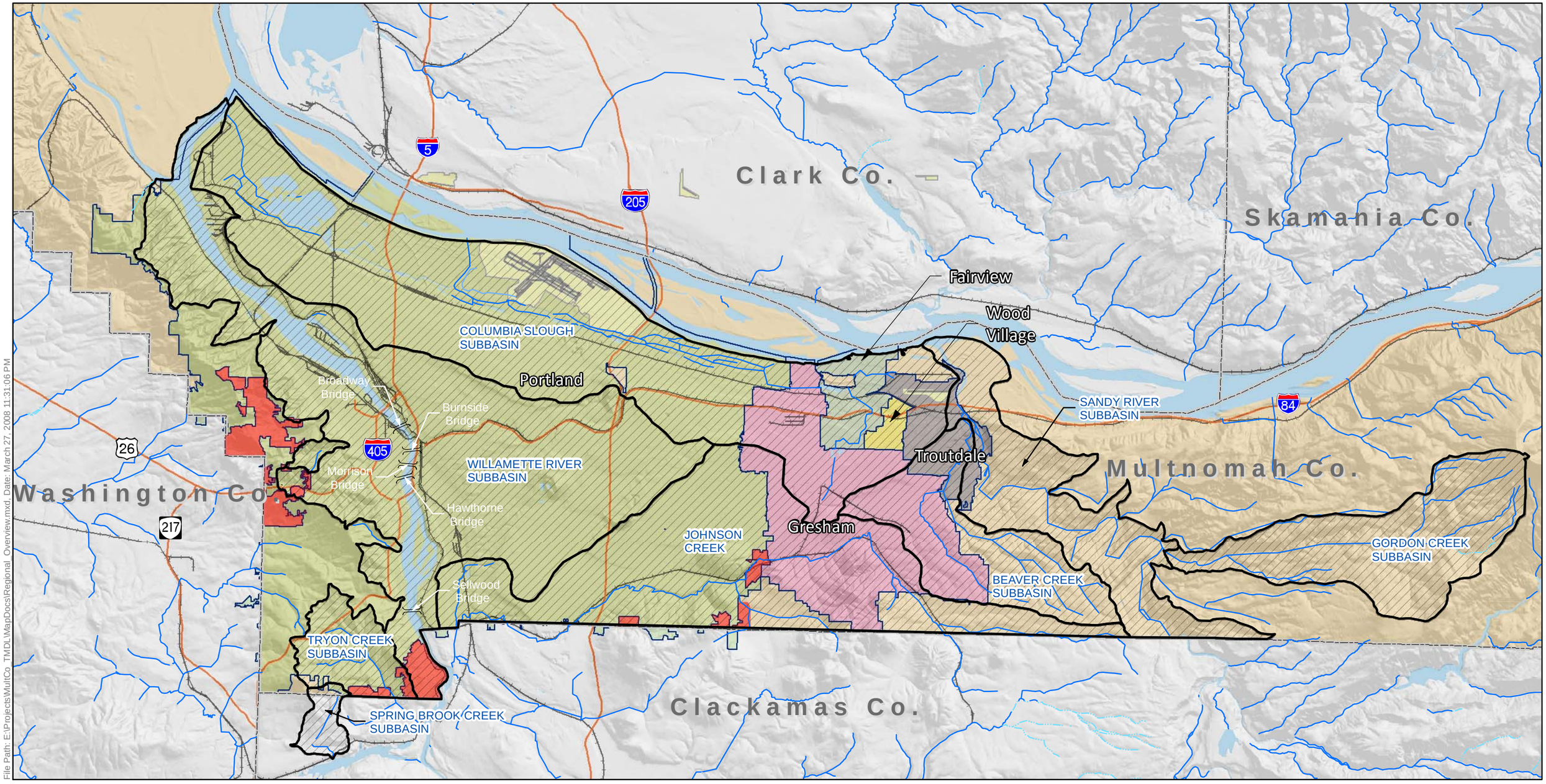
The Multnomah County TMDL Implementation Plan addresses actions to reduce pollutants in the streams identified in the Lower Willamette and Sandy River Basin TMDLs. Pollutants identified in the TMDL include bacteria, temperature, pesticides and mercury. The County priority is to coordinate and lead water quality investigations and actions in partnership with government agencies and non-governmental groups in order that water quality standards are met in the polluted streams. The Water Quality Program in the Department of Community Services Road Services Division manages the TMDL Implementation Plan.

The County will focus on its existing programs to prevent and control erosion through land use regulations, reduce pollutant contributions from stormwater with a stormwater management plan, and reduce mercury waste through the Toxics Reduction Strategy. The Water Quality Program coordinates with the Land Use Planning, Transportation Planning, Road and Bridge Maintenance sections within the department, and with the County Sustainability Program towards this end.

The County also intends to collect, analyze and share water quality data and field observations to develop partnerships that lead to clean up actions. In the rural areas, partnerships with the Oregon Department of Agriculture, Oregon Department of Forestry,

local Soil & Water Conservation Districts and watershed councils is essential, because the County does not have regulatory authority over agricultural and forestry activities. The partnership with the City of Portland Development Services is needed to resolve on-site septic system issues.

The County will manage the TMDL Implementation Plan adaptively by collecting, reviewing and sharing environmental and programmatic data and information. Plan modifications through this feedback will increase plan effectiveness to protect and restore impaired waterbodies within the County's jurisdiction and authority.



File Path: E:\Projects\MultCo_TMDL\MapDocs\Regional_Overview.mxd, Date: March 27, 2008 11:31:06 PM

Watersheds

Unincorporated Multnomah County

Unincorporated Multnomah County Under Portland Stormwater Management and Land Use Planning Authority

Multnomah County Willamette River Bridges

March 28, 2008

N

0 2.5 5 Miles

Appendix A
Multnomah County TMDL Watersheds

Lower Willamette and Sandy River Basin
TMDL Implementation Plan

APPENDIX B. Table of Multnomah County TMDL Management Strategies

Pollutant: Temperature (Shade surrogate)

Waterbody: Sandy River, Gordon Creek, Beaver Creek, Kelly Creek, Johnson Creek

Source	Strategy	How	Fiscal Analysis	2008	2009	2010	2011	2012
1. Lack of stream shading	a. Ensure stream buffers requirements are met through plan review	Continue plan review for new development and redevelopment	No additional resources needed	Ongoing program				
	b. Enforce County stream buffer requirement for new development	Continue County code enforcement	No additional resources needed	Ongoing program				
	c. Address riparian vegetation in agricultural areas through Agricultural Water Quality Plans	Notify local Soil & Water Conservation Districts of runoff issues and ODA for enforcement on agricultural land	No additional resources needed	Ongoing program				
	e. Educate landowners and encourage riparian vegetation maintenance and restoration	Work with East Multnomah Soil & Water Conservation Districts to provide technical assistance and disseminate grant opportunities	No additional resources needed	Coordinate with EMSWCD				
2. Improper implementation of timber harvest practices	a. Ensure permit violations are enforced	Notify Oregon Department of Forestry about suspected permit violations and other negative impacts from timber harvesting		Ongoing program				

Pollutant: Bacteria

Waterbody: Beaver Creek, Kelly Creek, Johnson Creek

Source	Strategy	How	Fiscal Analysis	2008	2009	2010	2011	2012
1. Failing septic systems	a. Conduct reach scale investigations in Johnson Creek	Follow the Agricultural Water Quality Plan baseline sampling (2007-2008) with analysis and additional investigative monitoring	No additional resources needed	Data collection by DEQ	Data analysis	Follow up investigation		Follow up investigation
	b. Conduct reach scale investigation in Beaver and Kelly Creek	Partner with City of Gresham to collect data	Approximately $5000 from WQ Program	Data collection	Data analysis and collection	Data analysis and collection	Data analysis and collection	Data analysis and collection
	b. Inspect OSS systems suspected of failure	County contracts with City of Portland sanitarian to provide inspection services	No additional resources needed	Ongoing program				
	c. Educate homeowners about septic system maintenance	Partner with East Multnomah Soil & Water Conservation District (EMSWCD) to develop and disseminate educational materials	No additional resources needed	Coordinate with EMSWCD				
2. Non-point source from agricultural lands	a. Conduct reach scale investigations based on TMDL study	Follow the Agricultural Water Quality Plan baseline sampling (2007-2008) with analysis and additional investigative monitoring	No additional resources needed	Data collection by DEQ	Data analysis	Coordinate with EMSWCD		
	b. Address runoff issues via Agricultural Water Quality Plans	Notify local Soil & Water Conservation Districts when problems are identified, or notify ODA for enforcement	No additional resources needed	Ongoing program				
3. Pet wastes	a. Educate pet owners	Partner with local Soil & Water Conservation Districts to develop and disseminate educational materials	No additional resources needed	Coordinate with EMSWCD				
4. Illegal dumping	a. Enforce Solid Waste Nuisance ordinance	Report all illegal dumping to County nuisance code enforcement (See Stormwater Program components below)	Already funded program	Ongoing program				

Pollutant: Mercury, DDT and Dieldrin (TSS surrogate)

Waterbody: Lower Willamette River (Mercury), Johnson Creek (DDT, Dieldrin)

Source	Strategy	How	Fiscal Analysis	2008	2009	2010	2011	2012
1. Non-point source of sediment from agricultural lands	a. Address agricultural runoff issues via Agricultural Water Quality Plans	Notify East Multnomah Soil & Water Conservation Districts of runoff issues and ODA for enforcement on agricultural land	No additional resources needed	Ongoing program				
	b. Educate landowners and encourage riparian vegetation maintenance and restoration	Work with East Multnomah Soil & Water Conservation Districts to provide technical assistance and disseminate grant opportunities	No additional resources needed	Ongoing program				
2. Soil erosion and sediment transport from urban development and roadways	a. Continue implementing the County Stormwater Management Plan in NPDES areas and rural headwaters of Johnson Creek							
		Participate in public involvement & education	Already funded program	Ongoing				
		Participate in regional public education efforts	Already funded	Ongoing				
		Participate in public meetings	Already funded	Ongoing				
		Distribute public education information	Already funded	Ongoing				
		Provide training for County staff on water quality	Already funded	Ongoing				
		Implement Adopt-a-Road program	Already funded	Ongoing				
		Implement storm drain marking program	Already funded	Ongoing				
		Conduct operations & maintenance of infrastrucure	Already funded	Ongoing				

Pollutant: Mercury, DDT and Dieldrin (TSS surrogate) (continued)

Source	Strategy	How	Fiscal Analysis	2008	2009	2010	2011	2012
		Conduct street sweeping	Already funded	Ongoing				
		Conduct street sweeping	Already funded	Ongoing				
		Properly dispose of road waste material	Already funded	Ongoing				
		Evaluate anti-icing actitities	Already funded	Ongoing				
		Regulate County truck hauling practices	Already funded	Ongoing				
		Conduct right-of-way and road shoulder maintenance	Already funded	Ongoing				
		Maintain ditches	Already funded	Ongoing				
		Detect and eliminate illicit discharges	Already funded	Ongoing				
		Coordinate interagency spill response	Already funded	Ongoing				
		Implement County spill responses	Already funded	Ongoing				
		Address spills from private truck haulers	Already funded	Ongoing				
		Erosion control for County contractors	Already funded	Ongoing				
		Pollution control for County contractors	Already funded	Ongoing				
		Identify and investigate illegal dumping	Already funded	Ongoing				
		Identify and investigate sanitary discharges	Already funded	Ongoing				
		Regulate new development and redevelopment	Already funded	Ongoing				
		Issue grading and hillside development permits	Already funded	Ongoing				
		Enforce stream setback requirements	Already funded	Ongoing				
		Regulate stormwater in new development	Already funded	Ongoing				
		Install structural controls	Already funded	Ongoing				
		Address water quality with new capital projects	Already funded	Ongoing				
		Retrofit existing facilities with stormwater treatment	Already funded	Ongoing				
		Preserve and restore natural environmental functions	Already funded	Ongoing				
		Manage vegetation in the right-of-way	Already funded	Ongoing				
		Encourage the use of native vegetation	Already funded	Ongoing				
3. Mercury-containing products used in County practices	a. Reduce use of products containing mercury	Purchase alternative products that contain less or no mercury: *Specify low-mercury fluorescent lamps; Ensure that new thermostats and switches in vehicles and equipment are mercury-free.*	No additional resources needed	Ongoing program				
	b. Ensure proper disposal of products containing mercury	Recycle products containing mercury: *Recycle all mercury-containing light tubes and non-alkaline batteries; Ensure best management practices for recycling of electronic waste*	No additional resources needed	Ongoing program				
		Install dental amalgam separators in County dental clinics	No additional resources needed	Ongoing program				