

City of Portland, Oregon

**National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System (MS4) Discharge Permit**

Permit Number: 101314

ANNUAL COMPLIANCE REPORT NO. 13

**Fiscal Year 2007-2008
(July 1, 2007 – June 30, 2008)**

Prepared for:

Oregon Department of Environmental Quality

November 1, 2008

Submitted by:

*City of Portland
Multnomah County
Port of Portland*

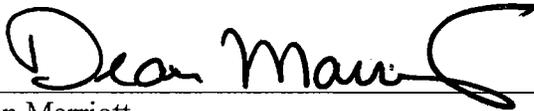
Portland, Oregon
National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System Discharge Permit
Permit Number: 101314

ANNUAL COMPLIANCE REPORT

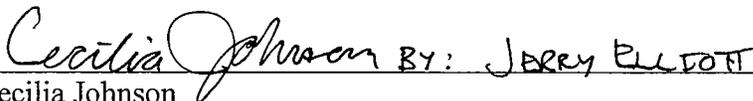
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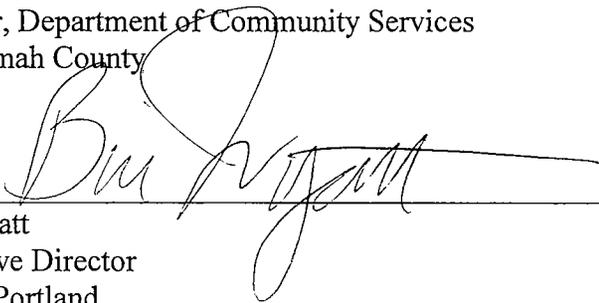
We, the undersigned, hereby submit this annual compliance report for the Municipal Separate Storm Sewer System Discharge Permit No. 101314, in accordance with Schedule B, Section 2-a of that permit. We certify, as required by 40 CFR Section 122.22, under penalty of law, that this document was prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Dean Marriott
Director, Bureau of Environmental Services
City of Portland



Cecilia Johnson
Director, Department of Community Services
Multnomah County



Bill Wyatt
Executive Director
Port of Portland



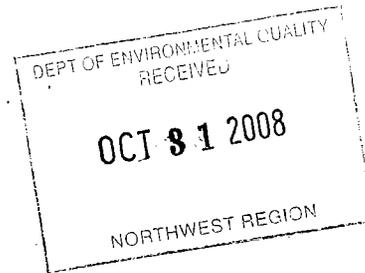
CITY OF PORTLAND
ENVIRONMENTAL SERVICES



1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204-1912 ■ Sam Adams, Commissioner ■ Dean Marriott, Director

October 31, 2008

Rodney Weick
NWR Stormwater and UIC Program Manager
Oregon Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987



10:55 AM

Dear Mr. Weick:

On behalf of the City of Portland and its co-permittees, I am pleased to submit the enclosed *NPDES Annual Compliance Report No. 13*. This report fulfills reporting requirements for the Portland NPDES Municipal Separate Storm Sewer System (MS4) Discharge Permit. Accomplishments for the 13th fiscal year of the permit program (July 1, 2007 through June 30, 2008) are included in the report.

The report demonstrates the co-permittees' progress toward meeting the permit requirements and stormwater program goals for the past year. Each co-permittee's section of the report details the activities implemented, program status, and any initiated or proposed program changes. An overview of each co-permittee's section is provided in the Executive Summary.

A Monitoring Compliance Report, which summarizes monitoring activities conducted by Portland in the past year, is included at the end of Section II of the report. The raw monitoring data are available upon request on CD-ROM.

Please call me at 503 823-5275 if you have any questions concerning this report.

Sincerely,

Patrice Mango
Stormwater Program Manager

cc: Dorothy Sperry, Port of Portland
Roy Iwai, Multnomah County

Enclosure

Permit Holder Information

Co-Permittee: City of Portland
Bureau of Environmental Services
Address: 1120 SW Fifth Ave., Room 1000, Portland, OR 97204
Contact Person: Patrice Mango
Telephone No.: 503-823-5275
E-mail Address: patricem@bes.ci.portland.or.us

Co-Permittee: Multnomah County
Department of Community Services
Address: 1620 SE 190th Avenue, Portland, OR 97233
Contact Person: Roy Iwai
Telephone No.: 503-988-5050 ext 28031
E-mail Address: Roy.Iwai@co.multnomah.or.us

Co-Permittee: Port of Portland
Address: 121 NW Everett, Portland, OR 97209
Contact Person: Dorothy Sperry
Telephone No.: 503-944-7642
E-mail Address: dorothy.sperry@portofportland.com

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EXECUTIVE SUMMARY

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INTRODUCTION

This 13th Annual Compliance Report is submitted to the Oregon Department of Environmental Quality (DEQ) to fulfill reporting requirements for the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit (hereinafter referred to as the stormwater permit or permit) issued to the City of Portland, Multnomah County, and Port of Portland (the co-permittees). The report provides information about activities that have been accomplished in accordance with the co-permittees' Stormwater Management Plans (SWMPs) during the 13th fiscal year (July 1, 2007 through June 30, 2008) of the permit program. The Annual Compliance Report includes individual reports prepared by each co-permittee.

BACKGROUND

DEQ issued the first stormwater permit for the MS4 within the Portland urban services boundary on September 7, 1995. DEQ issued the current permit in March 2004, beginning a second-five year permit term that expires on February 28, 2009. DEQ subsequently revised and reissued the second-term permit on July 27, 2005.

As required by the permit, the co-permittees submitted an Interim Evaluation Report (IER) to DEQ on May 1, 2006. The IER included revised Stormwater Management Plans that describe the measures the co-permittees will implement throughout the second permit term (March 8, 2005 – February 28, 2009). DEQ accepted the IER and SWMPs in July 2006.

The co-permittees submitted a permit renewal package to DEQ on September 2, 2008, which includes proposed revisions to the SWMPs. This Annual Compliance Report reports on activities conducted in accordance with the 2006 SWMPs, which will remain in effect until DEQ issues the third-term permit and accompanying approved SWMPs.

In managing and implementing the permit program, the co-permittees work in a cooperative effort with DEQ, Metro, the Oregon Association of Clean Water Agencies (ACWA), other agencies, and the public.

CITY OF PORTLAND

The City continued to implement the 2006 SWMP. The City also continued to coordinate MS4 program activities with other City actions and programs, including the Portland Watershed Management Plan, Combined Sewer Overflow (CSO) Program, Endangered Species Act (ESA) Program, Underground Injection Control (UIC) Program, Total Maximum Daily Load (TMDL) Program, Portland Harbor Superfund Site, and Office of Sustainable Development.

Key activities and accomplishments for permit year 13 are summarized below and described more fully in Section II of this annual report.

- Continued to implement the 2004 Stormwater Management Manual (SWM). Permitted approximately 2,283 private building permits and 85 public works permits. Completed the 2008 revision of the SWMM (to take effect October 2008).
- Continued to work with the City’s Stormwater Advisory Committee (SAC) on stormwater-related issues. During FY07/08, the SAC provided review of proposed Stormwater Management Plan revisions (included in the City’s September 2, 2008 permit renewal submittal), input on implementation of the Green Streets Program, and review and comment on the 2008 Stormwater Management Manual.
- Began the Grey to Green initiative, which includes a 5-year goal to implement over 43 acres of ecoroofs and more than 900 Green Streets citywide as a way to improve watershed health.
- Continued public involvement/education activities as a significant element of the Stormwater Program. Key activities included conducting stormwater education activities and stewardship grant programs, participating in the Regional Coalition for Clean Rivers and Streams, and developing/distributing educational publications and materials.
- The Portland Office of Transportation continues to follow the best management practices outlined in ODOT’s *Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices* as guidance for transportation-related maintenance activities.
- Continued to provide oversight, education, and technical assistance to ensure that commercial and industrial facilities comply with retrofit requirements under the Columbia South Shore Well Field Wellhead Protection Program. Conducted 250 inspections and follow-up of regulated businesses under the program.
- Collected approximately 4,916 cubic yards of debris and 237 cubic yards of leaf debris from streets that drain to the MS4 or directly to surface waters.
- Inspected, sampled, and administered the permits for 143 industries (and associated tenants) with stormwater discharge to the MS4.
- Conducted 13,042 erosion control-related inspections of private construction sites. Inspected 256 active public construction projects with erosion control components.
- Continued to implement the Stormwater Management Facility Maintenance Inspection Program (MIP) for private stormwater management facilities.
- In accordance with Stormwater Management Manual requirements, signed off on permits for a total of 875 source control measures at sites with high-risk characteristics or activities.
- Converted a total of 103 linear feet of roadside ditches to swales (the “porous shoulder” design).

- Continued implementation of projects under the Innovative Wet Weather Program, funded by a federal EPA grant for sustainable stormwater projects. Completed seven projects in permit year 13.
- Continued to provide technical assistance and grant funding for projects that incorporate green building principles, including stormwater pollution prevention and management.
- Continued Clean River Rewards to promote private stormwater managements. At the end of FY07-08, a total of 35,031 utility ratepayers with active accounts have registered for stormwater discounts: 33,610 single-family residential ratepayers (accounting for a total of 74,930,499 square feet of impervious area managed for stormwater) and 1,421 multifamily, commercial, and industrial ratepayers (accounting for a total of 29,731,626 square feet of impervious area managed for stormwater).
- Under the Natural Resources Inventory Update Project (required as part of the City's response to state land use planning laws), continued to update City inventories of significant streams, wetlands, riparian areas, and wildlife habitat.
- As part of the River Plan project, the City made progress toward developing a comprehensive, multi-objective plan for the land along the Willamette River in the North Reach.
- Continued regulatory improvement and code maintenance work, including changes that support watershed health and onsite stormwater management.
- Under the Watershed Revegetation Program, initiated 463.8 acres of new projects to be planted in future years. The program currently manages 1,574.5 project acres on both public and private property.
- Acquired approximately 1.29 acres of floodplain property under the Johnson Creek Willing Seller Program.

MULTNOMAH COUNTY

Multnomah County continued implementation of its comprehensive stormwater management program countywide in permit year 13. Although County activities within the permit area are limited, the stormwater program is implemented throughout the County, including areas outside the permit area consistent with County environmental and resource conservation policies.

Section III of the annual report contains descriptions of the County's stormwater management efforts, focusing primarily on activities within the permit area. Brief summaries below highlight key accomplishments.

- **Transportation Planning:** Planning staff continued participation on the Sellwood Bridge concept plan. The Sellwood Bridge is one of the County's Willamette River Bridges and is being considered for either rehabilitation or replacement. Concept considerations include water quality treatment in the drainage system
- **Routine Bridge Operations and Maintenance:** The Transportation Bridge Section continued to inspect and maintain water quality retrofits to the Burnside and Broadway Bridge catch basins.
- **Public Education and Outreach:** The County continued its partnership with the Regional Coalition for Clean Rivers and Streams. The coalition's efforts this past year focused on website development and promotion.

PORT OF PORTLAND

The Port of Portland continued to implement the Stormwater Management Plan that was approved by DEQ in July 2006.

The Port's annual report for permit year 13 summarizes requirements per Section B(2)(a) of the Port's MS4 permit. Section 7.0 of the Port's annual report describes the Port's specific stormwater management efforts during this permit year in accordance with implementation tasks and performance measures as outlined in the Port's SWMP. Key accomplishments are summarized below.

The Port of Portland continued to implement the Stormwater Management Plan that was approved by DEQ in July 2006.

The Port's annual report for permit year 13 summarizes requirements per Section B(2)(a) of the Port's MS4 permit. Section 7.0 of the Port's annual report describes the Port's specific stormwater management efforts during this permit year in accordance with implementation tasks and performance measures as outlined in the Port's SWMP. Key accomplishments are summarized below.

- The Port of Portland coordinates with the Portland co-permittees, particularly the City of Portland, with regards to monitoring and overall MS4 coordination.
- The Port conducts annual maintenance of the storm sewer system components on specific, Port-managed properties.
- Port staff continued to implement the Illicit Discharge Detection and Elimination Program. The program involves dry season field monitoring of priority outfalls and investigation of potential illicit discharges.
- Port staff implemented the Industrial Facility Inspection Program, increasing the number of facilities inspected annually.

- The Port continued its partnership with the Regional Coalition for Clean Rivers and Streams, which is dedicated which is dedicated to educating the public about the impact of stormwater runoff pollution on the health of our rivers and streams.

Section I

GENERAL INTRODUCTION

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This 13th Annual Compliance Report is submitted to the Oregon Department of Environmental Quality (DEQ) to fulfill reporting requirements for the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit (hereinafter referred to as the stormwater permit or permit) issued to the City of Portland, Multnomah County, and Port of Portland (the co-permittees). The report provides information about activities that have been accomplished in accordance with the co-permittees' Stormwater Management Plans (SWMPs) during the 13th fiscal year (July 1, 2007 through June 30, 2008) of the permit program.

PERMIT AREAS

The permit areas for the three co-permittees are described below.

- **City of Portland:** Approximately 15,754 acres within the City of Portland's urban services boundary drain to a separate storm sewer system. Portland's MS4 permit does not cover:
 - Stormwater that flows to sumps
 - Stormwater that flows to the combined sewer area
 - Natural stream systems
 - Direct stormwater discharges from private property to natural stream systems (without entering the MS4)
 - Areas with no public stormwater infrastructure
 - Areas with individual, general, or industrial stormwater permits
- **Port of Portland:** The Port owns approximately 6,246 acres within the City of Portland's urban services boundary. Much of this property drains to the Port's municipal separate storm sewer system and is regulated by the MS4 permit. This acreage includes Portland International Airport (PDX), four marine terminals, several industrial parks occupied by commercial tenants, mitigation sites, and undeveloped land.
- **Multnomah County:** Since the issuance of the first Portland-area MS4 permit in 1995, Multnomah County's jurisdiction and level of activity have been greatly reduced. Most significantly, the County no longer has land use planning authority within the few remaining unincorporated urban pockets within the permit area. Additionally, the City of Portland now has operation and maintenance responsibilities of all 18.76 miles of County dedicated roads and drainages within the permit area through an intergovernmental agreement. Multnomah County's primary activity within the permit area continues to be the operation and maintenance of five Willamette River bridges. The County Transportation Division also retains authority to review stormwater management plans, granting a handful of permits every year to access County right-of-way for limited stormwater discharge within the unincorporated pockets.

PERMIT BACKGROUND

DEQ issued the first stormwater permit for the MS4 within the Portland urban services boundary on September 7, 1995. By federal law, the initial term of the permit is 5 years and is administratively extended until renewed. The City of Portland, Port of Portland, and Multnomah County (the co-permittees) submitted a renewal application in February 2000. DEQ issued the second (current) permit in March 2004, beginning a second-five year permit term that expires on February 28, 2009. DEQ subsequently revised and reissued the permit on July 27, 2005.

STORMWATER MANAGEMENT PLANS

As required by the permit, the co-permittees submitted an Interim Evaluation Report (IER) to DEQ on May 1, 2006. The IER included a revised Stormwater Management Plan for each co-permittee. The SWMPs describe the measures the co-permittees will implement throughout the second permit term (March 8, 2005 – February 28, 2009) to reduce the discharge of pollutants in stormwater to the maximum extent practicable in compliance with the applicable requirements of the Clean Water Act. DEQ accepted the IER and SWMPs in July 2006.

The co-permittees submitted a permit renewal package to DEQ on September 2, 2008 (180 days before the permit expires, as required). The renewal package includes proposed revised SWMPs.

This Annual Compliance Report reports on activities conducted in accordance with the May 2, 2006 SWMPs. The current SWMPs will remain in effect until DEQ issues the third-term permit and accompanying approved SWMPs to the co-permittees.

PROGRAM COORDINATION

The three co-permittees meet regularly to share information about program implementation and coordination, BMP effectiveness, monitoring, public involvement through the Regional Coalition for Clean Rivers and Streams, and other issues related to the permit. This coordination avoids duplication and helps ensure the cost-effective use of resources.

The co-permittees rely on regional cooperative efforts to successfully fulfill some of the permit requirements. The co-permittees work closely with Metro (the regional government) to support programs that have a positive water quality benefit. Examples include the household hazardous waste disposal program, the GreenStreets program, and Titles 3 and 13 of Metro's Urban Growth Management Functional Plan.

The co-permittees coordinate and address stormwater permit implementation issues with other jurisdictions in the state through the Oregon Association of Clean Water Agencies (ACWA). Co-permittee representatives actively participate in ACWA's water quality, stormwater, and groundwater committees.

REPORT ORGANIZATION

This 13th annual report covers the period from July 1, 2007 through June 30, 2008. It includes implementation actions and accomplishments that occurred during that period alone (i.e., it is not cumulative) unless otherwise noted.

The report is organized as follows:

- **Executive Summary:** A summary of significant program activities and program status for all of the co-permittees.
- **Section I: General Introduction:** An overview of the permit area, permit background, and SWMPs; program coordination; and report organization. This information is relevant to all three co-permittees.
- **Sections II, III, and IV:** The individual compliance reports of the co-permittees (City of Portland, Multnomah County, and Port of Portland, respectively), describing implementation actions taken and any initiated or proposed program changes.

The report's goal is to convey clear, succinct program information that complies with the annual reporting requirements of the NPDES permit. The report will also provide other interested parties with a status overview of the co-permittees' stormwater programs. Detailed supporting information, such as inspection reports, logs, and individual correspondence, are archived at each permitted agency and are available to DEQ upon request.

**Section II
CITY OF PORTLAND**

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INTRODUCTION

This Annual Compliance Report for the City of Portland's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit (referred to as the municipal stormwater permit, NPDES permit, or MS4 permit) program identifies activities that occurred during the 13th fiscal year (July 1, 2007 through June 30, 2008) of the program and summarizes the status of the program.

This Introduction contains the following sections:

- Key Accomplishments
- Program Organization and Coordination
- Changes to Best Management Practices
- Urban Growth Boundary Expansion Areas
- Stormwater Outfalls
- Relationship to Other Water Quality Programs
- City Budget and Funding

Following the Introduction are individual activity reports for each best management practice (BMP).

KEY ACCOMPLISHMENTS

- Continued to implement the 2004 Stormwater Management Manual (SWM). Permitted approximately 2,283 private building permits and 85 public works permits. Completed the 2008 revision of the SWMM (effective October 2008).
- Continued to work with the City's Stormwater Advisory Committee (SAC) on stormwater-related issues. During FY07/08, the SAC provided review of proposed Stormwater Management Plan revisions (included in the City's September 2, 2008 permit renewal submittal), input on implementation of the Green Streets Program, and review and comment on the 2008 Stormwater Management Manual.
- Began the Grey to Green initiative, which includes a 5-year goal to implement over 43 acres of ecoroofs and more than 900 Green Streets citywide as a way to improve watershed health.
- Continued public involvement/education activities as a significant element of the stormwater program. Key activities included conducting stormwater education activities and stewardship grant programs, participating in the Regional Coalition for Clean Rivers and Streams, and developing/distributing educational publications and materials.
- Continued to follow the best management practices outlined in ODOT's *Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices* as guidance for transportation-related maintenance activities.

- Continued to provide oversight, education, and technical assistance to ensure that commercial and industrial facilities comply with retrofit requirements under the Columbia South Shore Well Field Wellhead Protection Program. Conducted 250 inspections and follow-up inspections of regulated businesses under the program.
- Collected approximately 4,916 cubic yards of debris and 237 cubic yards of leaf debris from streets that drain to the MS4 or directly to surface waters.
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- In accordance with Stormwater Management Manual requirements, signed off on permits for a total of 875 source control measures at sites with high-risk characteristics or activities.
- Converted a total of 103 linear feet of roadside ditches to swales (the “porous shoulder” design).
- Continued implementation of projects under the Innovative Wet Weather Program, funded by a federal EPA grant for sustainable stormwater projects. Completed seven projects in permit year 13.
- Continued to provide technical assistance and grant funding for projects that incorporate green building principles, including stormwater pollution prevention and management.
- Continued Clean River Rewards to promote private stormwater management. At the end of FY07-08, a total of 35,031 utility ratepayers with active accounts have registered for stormwater discounts: 33,610 single-family residential ratepayers (accounting for a total of 74,930,499 square feet of impervious area managed for stormwater) and 1,421 multifamily, commercial, and industrial ratepayers (accounting for a total of 29,731,626 square feet of impervious area managed for stormwater).
- Under the Natural Resources Inventory Update Project (required as part of the City’s response to state land use planning laws), continued to update City inventories of significant streams, wetlands, riparian areas, and wildlife habitat.
- As part of the River Plan project, made progress toward developing a comprehensive, multi-objective plan for the land along the Willamette River in the North Reach.

- Continued regulatory improvement and code maintenance work, including changes that support watershed health and onsite stormwater management.
- Under the Watershed Revegetation Program, initiated 463.8 acres of new projects to be planted in future years. The program currently manages 1,574.5 project acres on both public and private property.
- Acquired approximately 1.29 acres of floodplain property under the Johnson Creek Willing Seller Program.

PROGRAM ORGANIZATION AND COORDINATION

Program Authorization

The Portland City Council passed a resolution supporting the final National Pollutant Discharge Elimination System (NPDES) stormwater permit application in June 1995. In that resolution, the Council designated the Bureau of Environmental Services (BES) as the lead for the City's implementation of the stormwater program. In accordance with Section 402(p) of the Clean Water Act, the Oregon Department of Environmental Quality (DEQ) issued the first-term permit on September 7, 1995. The City of Portland and its co-permittees submitted a renewal application as required (180 days before the date of the original permit expiration) in February 2000. DEQ issued the permit renewal in March 2004, beginning a second five-year permit term that expires on February 28, 2009. DEQ subsequently reconsidered the second-term permit and reissued the permit in July 2005.

Legal Authority

The City of Portland continues to maintain legal authority to implement the programs outlined in the Stormwater Management Plan (SWMP) as initially demonstrated in Part 1 of the original NPDES Municipal Storm Water Permit Application.

City Management and Coordination

BES's Stormwater Program Manager is responsible for overall project management, compliance reporting, policy development, and coordination within the City of Portland, as well as for coordination with the other Portland co-permittees. In accordance with Portland's watershed approach, BES project planning and implementation generally is organized by watershed to enhance project coordination. BES staff members serve as leads for the various BMPs contained in the SWMP. Because the permit is citywide, many City staff members outside BES are also involved with stormwater program development, implementation, and reporting. The BMP staff leads coordinate stormwater program activities through BMP-specific teams that include representatives from appropriate bureaus.

CHANGES TO BEST MANAGEMENT PRACTICES

During permit year 13, the City reviewed its best management practices and prepared a proposed revised SWMP for inclusion in Portland's permit renewal submittal to DEQ on September 2, 2008. The current SWMP will remain in effect until DEQ issues a revised permit and the revised SWMP becomes effective. This Annual Report therefore reports on the existing BMPs contained in the current (2006) SWMP.

URBAN GROWTH BOUNDARY EXPANSION AREAS

There were no expansions to Portland's urban growth boundary in permit year 13, and no expansions are expected in permit year 14.

STORMWATER OUTFALLS

Separated Sewer Outfalls

In FY07-08, no combined sewer outfalls were converted to stormwater-only outfalls.

RELATIONSHIP TO OTHER WATER QUALITY PROGRAMS

BES works cooperatively with many other City bureaus on watershed issues. Although not all of the following activities are specifically required as part of the NPDES MS4 permit, they are closely associated with the stormwater program, are related to stormwater quality, and are a part of restoring watershed health. These programs and projects are coordinated with the Portland Watershed Management Plan for greatest watershed health benefits.

Portland Watershed Management Plan

In 2005, the Portland Watershed Management Plan (PWMP) was developed to guide the City's commitment to improve watershed health and protect and enhance its natural resources. The PWMP is based on the "watershed approach." The watershed approach can be described as an overall context that defines how the City does its ongoing work in developing and maintaining its infrastructure, property redevelopment, and open space maintenance. (City infrastructure includes storm and sanitary sewer systems, roads, water supply system, etc.) Doing the work of the City using the watershed approach means that activities—such as construction of new infrastructure and repair and upgrading of existing features, redevelopment of areas such as the South Waterfront, and construction of new parks—are done in a manner that protects and enhances watershed health wherever feasible. Rather than focusing separately on single issues or meeting specific regulatory requirements such as protection of water quality or cleanup of contaminated sediments, the PWMP collectively considers all activities that affect watershed conditions.

The watershed approach reflects and implements core City values. In addition to protecting and improving the quality of the watershed, these values include improved public safety, economic vitality, and community stewardship. This approach relies on integrating the activities of multiple City bureaus and maximizes the use of limited resources by looking for solutions that meet multiple objectives.

Watershed Investment Fund (WIF): With the adoption of the Portland Watershed Management Plan in 2005, the Watershed Investment Fund was initiated to step up the city's investment in the protection and restoration of Portland's watershed health. For 2007-2008, WIF funding was increased from \$500,000 to \$1,500,000 to support 15 BES projects and five grants for community-based projects throughout the city of Portland. In addition, three projects from FY07 were carried over and received funding from the FY08 budget.

Implementation Plan: Implementation of the PWMP will rely on a management system to collect and evaluate the performance of PWMP projects. Priority projects for existing funds will be selected using the information available, including effectiveness monitoring data and performance measures. As future watershed project funding becomes available, the intention of the PWMP is to evaluate and select projects using a greater quantity and quality of information to improve the certainty of project success. Over time, the goal of this approach will be to move implementation toward a series of defined indicators, targets, and benchmarks to better link actions to improvements in watershed conditions.

BES System Plan

The BES System Plan update began in late 2005; a draft document is due in spring 2009. This project is the update of the 1999 BES Public Facilities Plan. The BES System Plan is a comprehensive facilities planning document that guides the bureau's expenditures by identifying and recommending projects that maintain, improve, or expand the wastewater/stormwater infrastructure system. Projects are developed using both natural and engineered solutions to satisfy regulatory requirements and are implemented in a manner protective of public health, water quality, and the environment. The System Plan's infrastructure focus is complementary to the watershed approach of the PWMP.

The System Plan is being developed with an asset management context that considers life-cycle costs, risk, and the environmental and social benefits in the project's ranking. This new ranking methodology will enable the ranking of projects across different asset classes (e.g., a stormwater project ranked against a sanitary sewer project).

Elements of the BES System Plan include a sewer rehabilitation plan, an updated combined sewer plan, and an updated sanitary sewer plan. Work on the stormwater facilities element of the System Plan will begin in fall 2008 and will be completed in 2011.

Combined Sewer Overflow Reduction

The City is in the last of four major phases of a program to control combined sewer overflows (CSOs) to the Willamette River and Columbia Slough. Activities have included a combination of stormwater inflow reductions (roof drain disconnections, sump installation, local separation) and large structural solutions (including the West Side CSO tunnel system completed in 2006 and the East Side CSO tunnel system scheduled for completion in 2011), as well as treatment plant and pump station upgrades. Since 1990, Portland has reduced CSOs from 6.0 billion gallons per year to about 2.0 billion gallons per year on an average basis. CSO discharges to the Columbia Slough have been reduced by over 99 percent, while discharges to the Willamette River have been reduced by over 40 percent to date. Over 2 billion gallons of local stream and

stormwater runoff have been removed from the combined sewer system through the use of sumps, downspout disconnections, and stream separations.

Pretreatment Programs and Publicly Owned Treatment Works (POTWs)

Many of the City's more traditional operations and infrastructure support water quality goals. Sanitary sewage is collected for treatment at the Columbia Boulevard and Tryon Creek publicly owned treatment works (POTWs). Existing pretreatment programs protect the sanitary system infrastructure, reduce pollutant releases to surface waters during combined sewer overflows, and prevent discharges that could cause treatment upsets or result in pollutant pass-through to surface waters.

BES's Industrial Source Control Division (ISCD) has administered a state and federally approved industrial pretreatment program since 1983. The program was implemented as a federal mandate to control the discharge of toxic pollutants from industrial sources that interfere with the operation of Portland's wastewater treatment plants, collection systems, and biosolids uses.

Underground Injection Control (UIC) Program

DEQ defines an underground injection control (UIC) as any system, structure, or activity that discharges fluid below the ground or subsurface, including sumps, drywells, and soakage trenches. UICs can pollute groundwater and surface water if not properly designed, sited, and operated. DEQ regulates all underground injection in Oregon. On June 1, 2005, DEQ issued the City of Portland a Water Pollution Control Facility (WPCF) Permit for City-owned or operated UICs (approximately 9,000). In accordance with WPCF permit conditions, the City has developed a *UIC Management Plan*, including BMPs, a monitoring plan, a spill response plan, and an operations and maintenance plan. Many of the components of these plans are similar to actions implemented as part of the SWMP—for example, pollution prevention, stormwater treatment, and operations and maintenance of facilities. Both the MS4 stormwater program and UIC program focus on improving stormwater quality.

Total Maximum Daily Load (TMDL) Program

Under Section 303 of the Clean Water Act, states are required to develop "303(d)" lists of impaired waters that do not meet water quality standards set by the state for certain pollutants. In Oregon, DEQ has this responsibility. After a water body is placed on the 303(d) list, DEQ is required to develop total maximum daily loads (TMDLs) for the listed pollutant(s). A TMDL is the maximum amount of a pollutant a water body can assimilate (load capacity) without violating a water quality standard. The aim of the TMDL program is to manage water resources so pollutants do not exceed water quality standards and so "beneficial uses" (e.g., water contact recreation, cold water fisheries, municipal and industrial water supply and navigation) are protected.

A TMDL divides the allowed load (load capacity) of any pollutant for each water body or reach among those entities authorized to discharge that pollutant. The amount of a given pollutant that a source with an NPDES permit (such as an industry or municipality) is allowed to discharge to the water body is called a wasteload allocation. Non-point sources (e.g., agriculture and forestry) receive a load allocation where appropriate.

In Portland, TMDLs and wasteload allocations have been established for pollutants in the Columbia Slough, the Tualatin River (Fanno and Rock Creek), Johnson Creek, the Willamette River and its tributaries. The most recent TMDLs for the Willamette River, Johnson Creek, and the Columbia Slough were approved by EPA on September 29, 2006. Portland submitted a comprehensive city-wide TMDL implementation plan on March 31, 2008 that describes how to manage pollutant loads entering the listed water bodies. This plan includes a variety of best management practices, largely based on the MS4 Stormwater Management Plan, emphasizing stormwater pollutant prevention and management, as well as erosion controls. In addition, the plan includes watershed specific action and activities. Examples of activities already underway include instream flow control, riparian tree planting, culvert replacement, streambank restoration, education programs, and stormwater management facilities. For those pollutants related to stormwater within the MS4 area, TMDLs are addressed as part of the MS4 permit implementation.

Science, Fish and Wildlife Section—Endangered Species Act (ESA) Program

Portland's Endangered Species Act Program was created in March 1998, shortly after the National Oceanographic and Atmospheric Association (NOAA) listed steelhead trout in the lower Columbia River system as a threatened species under the federal Endangered Species Act (ESA). Chinook and chum salmon were subsequently listed as a threatened species in March 1999 and coho salmon in June 2005. On August 12, 2005, the National Marine Fisheries Service (NMFS) announced designations of critical habitat areas in Portland for salmon and steelhead listed under the ESA. The designated areas in Portland include Johnson Creek (including Kelley Creek and Crystal Springs), Tryon Creek, the north part of the Columbia Slough (and Smith and Bybee Lakes), and the mainstem Willamette River.

The ESA program takes an integrated, citywide approach to salmon recovery, recognizing that the most important step the City can take to restore healthy salmon populations is to restore healthy watersheds. This comprehensive approach ensures that salmon recovery goals are compatible with other City goals and that restoration actions address multiple environmental objectives. Stormwater program activities closely relate to ESA goals; implementation of BMPs will mitigate stormwater quantity impacts and improve water quality. Stormwater program staff coordinate with City ESA staff on program activities related to fish impacts.

In 2006, the Science, Fish, and Wildlife Section within BES's Watershed Group (which includes responsibility for the City's compliance with ESA requirements and program implementation) embarked on development of a Terrestrial Ecology Enhancement Strategy to complement the work that has focused on restoration of aquatic communities, including salmon populations. The Portland Watershed Management Plan identifies the development of a terrestrial strategy as a high priority. The strategy will identify actions for improving upland and riparian watershed conditions.

Portland Harbor Superfund Site

The current Portland Harbor Superfund Study area covers about a 10-mile stretch of the Lower Willamette from below the Broadway Bridge to just upstream of the Columbia Slough confluence. It is designated as a Superfund site because of sediment contamination. Portland Harbor has a long history of shipping, industrial, and commercial activity because of its key

location on the Willamette River. The operational and waste disposal practices common to these industries many years ago polluted the river. Discharges from sewer outfalls, stormwater, and agricultural runoff may also contribute to the contamination. The City of Portland is a member of the Lower Willamette Group, a coalition of businesses and the Port of Portland. The group has voluntarily stepped forward to fund and participate in the site investigation. This work includes characterizing the extent of contamination in fish, wildlife, and sediments in the harbor and assessing risks to humans, fish and wildlife, and the environment from contaminated sediments.

Additionally, BES has an Intergovernmental Agreement with DEQ to jointly investigate and control sources of contamination discharging to the City’s conveyance systems. The BES Portland Harbor program works closely with DEQ and the BES Industrial Stormwater program to identify sites with potential contamination, evaluate stormwater and groundwater pathways, and determine appropriate controls.

CITY BUDGET AND FUNDING

The City of Portland has invested more than \$578.4 million in stormwater management services and facilities during permit years 1 through 13. The revenue requirements for permit year 13 totaled approximately \$72.8 million, allocated as follows:

Major Program Category	Requirements	Percentage Share
Enforcement and Development Review	\$ 7.4 million	10%
Watershed Program & Habitat Restoration	22.0 million	30%
Facilities Operations and Maintenance	15.2 million	21%
Capital Improvements*	28.2 million	39%
Total Revenue Requirements	\$ 72.8 million	
* Includes debt service, facilities planning and engineering, construction engineering, and construction contracts.		

Eighty-two percent of these revenue requirements are financed through direct monthly user fees. The remaining revenue sources include direct charges for new private development (system development charges), service charges, permit fees, and regulatory charges and penalties. More details on City revenues are provided below.

In year 14, the City plans to invest \$75.1 million in stormwater management services and facilities. Direct monthly user fees will pay for 85 percent of these investments.

Stormwater Management Charges

City Council approves revised stormwater monthly user fees and stormwater system development charges (SDCs) at the start of each fiscal year. Monthly user fees are adjusted to reflect operating, maintenance, and capital costs of the City’s sanitary sewer and drainage system. The rate adjustments are based upon cost of service principles, ensuring equity by charging ratepayers according to the amount of sewer and drainage service they use.

The following table reports the monthly single-family stormwater management charge and the monthly stormwater rate per 1,000 square feet of impervious area for the last five permit years:

	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Single-Family Residential Charge	\$12.07	\$13.30	\$14.26	\$16.82	\$17.33
Residential rate per 1,000 square feet of impervious area	\$5.03	\$5.54	\$5.94	\$7.01	\$7.22
Non-residential rate per 1,000 square feet of impervious area	\$5.54	\$6.06	\$6.45	\$7.56	\$7.91

At the close of FY 2007-2008, City Council increased the monthly stormwater management charge for single-family residences from \$17.33 to \$18.55. The residential rate increased from \$7.22 to \$7.73 per 1,000 square feet of impervious surface per month, and the commercial rate increased from \$7.91 to \$8.43 per 1,000 square feet of impervious area per month.

Stormwater System Development Charges

Formerly based on impervious area, the methodology for assessing system development charges (SDCs) for new development and significant redevelopment was revised in permit year three to include two components. One component represents the charge for stormwater facilities that handle runoff from individual properties. For permit year 13, this onsite portion was assessed based on \$127.00 per 1,000 square feet of impervious area. Riparian properties that drain directly to the Columbia Slough, Columbia River, or Willamette River are exempt from this portion of the SDC. The other portion represents the cost of stormwater facilities that handle runoff from public rights-of-way. This portion was assessed based on the use of the transportation system, using road frontage and vehicle trips to allocate the costs. For permit year 13, the rates were \$4.07 per linear foot and \$2.10 per vehicle trip. At the end of permit year 13, City Council increased the rates for stormwater system development charges to \$136.00 per 1,000 square feet of impervious area, \$4.27 per linear foot of frontage, and \$2.23 per daily vehicle trip.

Discounts may be granted only for the “onsite” part of the charge for facilities constructed as part of new development. Discounts range from 80 percent for retention of the 100-year event to no discount for control of the 10-year storm.

ACTIVITY REPORTS

The following pages summarize the status of the City of Portland BMPs. The following information is provided for each BMP:

- The BMP identifier (e.g., PI-1) and description
- Key accomplishments for permit year 13
- Performance measures
- Projected major accomplishments for permit year 14 (FY 08-09)
- Proposed BMP Revisions

PI-1: Implement public information, education, involvement, and stewardship activities that will raise awareness, foster community stewardship, and promote pollution prevention and stormwater management.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

Clean Rivers Education Programs

- Reached 6,730 students (grades K-12) with classroom programs that provide hands-on, interactive science education about stormwater and other environmental issues. Student participation by watershed:

Columbia Slough:	1,425
Fanno/Tryon Creek:	487
Johnson Creek:	1,389
Willamette River:	3,378
Special workshops (all)	77
Total:	6,730

- Involved 6,241 students (K-12) in education field programs that offer watershed investigations and field assessments, such as how to measure water quality and conduct macroinvertebrate sampling as indicators of water quality health. Also included are stormwater tours, boat tours, and restoration experiences along streams and wetlands. Student participation by watershed:

Columbia Slough:	1,753
Fanno/Tryon Creek:	341
Johnson Creek:	2,360
Willamette River:	1,787
Total:	6,241

Of the above total 6,241, 2,083 of the students combined education with natural area restoration service projects. Student participation by watershed:

Columbia Slough (Whitaker Ponds, Big Four Corners)	486
Fanno Creek (Gabriel Park, Pendleton Creek)	199
Johnson Creek (Veterans Creek, Tideman Johnson, Errol Heights, Johnson Creek Park, Schweitzer Greenspace, Brookside)	896
Willamette River (Oaks Bottom, Stephens Creek, Forest Park)	502
Total:	2,083

- Co-sponsored delivery of the assembly program: *Living Streams, Stories for Healthy Watersheds*. The assembly was presented to a combination of 13,400 elementary students, teachers and family audiences at special events within the City of Portland. The assembly focuses on stormwater pollution, what students can do to protect rivers and streams, and the relationship of stormwater pollution to wildlife health. An accompanying assembly curriculum on the BES website received 6,540 hits.

- Continued to target residents of the New Columbia neighborhood in North Portland. Rosa Parks Elementary School, which serves the neighborhood, was built according to the latest technology in green building design and stormwater management, providing a perfect classroom for the diverse student body to learn about stormwater issues. Educators were able to tie classroom and field activities to neighborhood resources, including bioswales and natural areas, as well as to festivals and camps dedicated to educating the larger community. 287 youth and community members participated in related activities,
- Provided jet boat tours of the Willamette River to 535 students in the Johnson Creek, Fanno, and Willamette Watersheds. Canoe trips on the Columbia Slough were offered for 197 students in the Columbia Slough Watershed. All students completed special classroom studies and a stewardship project to be eligible. The focus of the tours was on river and slough history, how land usage impacts waterways, combined sewer overflow history, stormwater pollution, and how personal actions can help prevent stormwater pollution.
- Checked out stormwater and watershed curriculum kits to 21 Portland elementary and middle school teachers for them to work independently with students in the classroom and at special school events.
- Provided teacher and community training workshops, involving 77 participants. Worked in partnership with Portland Public Schools, PSU, and Tryon Creek State Park.
- Trained 25 high school students to act as mentors to elementary students during field restoration and education projects. Students represented Fir Ridge High School, Meek Professional Technical School, and Reynolds Learning Academy.
- Presented Stormwater - Soak it Up, a 75-minute classroom program for grades 4-12, and special interest groups totaling 890 students and teachers. The students learned to identify pollutants, distinguish between pervious and impervious surfaces, calculate runoff, and design greener cities within given budget constraints. Students reached in each watershed:

Columbia Slough:	40
Fanno/Tryon Creek:	88
Johnson Creek:	199
Willamette River:	563
Total	890
- Presented Tours of Stormwater Solutions to 57 students. Students visited bioswales, stormwater planters, ecoroofs, porous pavement, and creative downspout disconnections. They learned how these solutions can filter pollution, slow down stormwater, and prevent erosion.
- Presented Watershed Awareness to 820 students, grades 3-6. This program focuses on common non-point sources of pollution found in a watershed and how to prevent stormwater pollution. Students reached in each watershed:

Columbia Slough:	271
Fanno/Tryon Creek:	51
Johnson Creek:	111
Willamette River:	387
Total:	820

- Continued the permanent storm drain curb marker program. The program is a community and school stewardship activity to increase awareness of stormwater pollution and help prevent the public from disposing household or lawn chemicals into the storm drain. Volunteers also distribute doorhangers containing stormwater pollution prevention messages and clean river tips to nearby residences. Number of participants: 64 (in Columbia Slough and Willamette River Watersheds).
- Targeted schools with onsite stormwater facilities for extended outreach. Schools included Mt. Tabor Middle School, Kelly School, and Rosa Parks School. Students learned about stormwater pollution prevention, their school’s sustainable stormwater facilities and participated in maintenance activities for their facilities.
- Participated in 14 community events, with a total of 1,525 participants. These included the Children’s Clean Water Festival, Columbia Slough Regatta, Explorando El Columbia Slough, Intel NW Science Expo, New Columbia Neighborhood Hot Fun in the Summertime, Pocket Park Day, Spring Break Kick-Off, Stewardship Saturday and Bioswale Festival, Portland Harbor Field Day, Reynolds Middle School Water Festival, Sustainable Living Show, Portland Public Schools Science Curriculum Fair, and the City of Portland Native American Month Brown Bag. All events included stormwater pollution prevention messages.
- BES’s contract performer, Will Hornyak, performed portions of the storytelling assembly, *Living Streams* at the following special events reaching 2,600 audience members: Water in the Desert: Art Water and Watersheds- St. Johns Park (400 audience members), New Columbia Neighborhood Center (20 audience members), Reynolds Middle School Water Festival (100 audience members), Welcome the Rain Festival (200 audience members), Explorando El Columbia Slough (450 audience members), Children’s Clean Water Festival (300 audience members), Muddy Boots Festival (500 audience members), and Metro’s Salmon Festival (900 audience members).

Education Advisory Committee

- Continued bimonthly Education Advisory Committee meetings to provide input and feedback for public education approaches and activities.

Stewardship Activities and Community Events

Columbia Slough Watershed

- Co-sponsored and participated in numerous community events, including Slough 101, Wetlands 101, Groundwater 101, Explorando El Columbia Slough, Canoe the Slough, Columbia Slough Small Craft Regatta, Aquifer Adventure, Corps of Rediscovery, three Soup on the Slough events, two watershed cycling events, four Great Blue Heron week events, two Wild in the City events, and five neighborhood association picnics and gatherings in which stormwater was a topic of instruction. The City was a co sponsor in the Columbia Slough Watershed Awards program. The total attendance was approximately 3,051 persons.
- Participated in three training programs for 15 “Eyes on the Slough” volunteer monitors. Monitors paddle each reach of the Columbia Slough monthly and report on water quality and landscape conditions.
- Provided canoe tours of the Columbia Slough to 200 students who had studied about the Columbia Slough Watershed and had completed a stewardship project.
- Participated in developing projects for the Columbia Slough Watershed Council Action Plan, which identifies numerous stormwater watershed restoration projects and activities for the Council and its partners.
- Co-sponsored 10 Stewardship Saturdays events at three sites in the watershed. Involved 124 volunteers and 374 volunteer hours, planted 400 native trees and shrubs, removed invasive vegetation, and provided stormwater education.
- New partners/contacts included the Helensview Eco Housing Fair, Kenton Neighborhood Fair, Concordia University Eco-fair, Native American Youth and Family Center.
- Continued mentoring and sponsorship of the development of community/university partners with the National University of Vietnam- Ho Chi Minh City and their Center for Academic Excellence. Staff from Vietnam and BES are involved in co-training and model curriculum development for community-based urban ecosystem environmental solutions

Willamette Watershed

- Participated in Multnomah Days, reaching 100 citizens. Provided information on watershed health for the Stephens Creek subwatershed and the Willamette Watershed in general.
- Participated in Welcome the Rain community event, reaching 20 citizens. Provided information on watershed health.
- Presented the Stephens Creek Confluence Project to the public at one open house (attended by 20 citizens) and five neighborhood association and homeowner association meetings (with 70 attendees).

- Created a Stephens Creek Confluence project website.
- Tabor to the River: Brooklyn Creek Basin Program integrates a variety of sewer, stormwater management, and watershed improvements in the Brooklyn Creek Basin. Accomplishments included:
 - Held four focus group studies, with 28 attendees. Presented the project to Sunnyside Environmental School (250 students, 12 adults)
 - Worked with 26 PSU students in Capstone and Community Development classes.
 - Sent a newsletter and project flyer describing the program to 17,000 property owners within the basin; sent specific project area flyers to 1,807 residents) and letters/postcards to 106 residents.
 - Created a project website.
 - Promoted a calendar of events
- BES partnered with Portland Parks and Recreation and active volunteer groups to provide community involvement and stewardship at Portland parks within the Willamette Watershed. Hosted work parties to realign trails to reduce erosion, remove invasive plants, and replant wetland, riparian, and upland habitats with native plant assemblages. Specific accomplishments included:
 - Cathedral Park: Four events, including Earth Day and education events with local high school students, reached 130 participants. Eight work parties involved 174 volunteers, and 632 volunteer hours.
 - Oaks Crossing: Four work parties involve 46 volunteers and 247 volunteer hours.
 - South Portland Riverbank: Eighteen work parties involved 224 volunteers and 754 volunteer hours.

Additionally, Parks staff conducted active outreach to dog owners in natural areas within the Willamette Watershed. Education focused on water quality, interaction with wildlife, and dog/human health reached over 550 participants.

- The Invasive Species Removal Program continued developing a strategy for the management of invasive species, which includes public outreach and education, interbureau and interagency coordination, restoration, a control and restoration program, policy changes, assessment and monitoring, and identification of funding. In partnership with other agencies and organizations, conducted the following activities:
[Also Reported in NS-1]
 - Produced a Garden Smart booklet that helps gardeners select appropriate non-invasive replacement plants.
 - Participated in five outreach events that reached 575 participants.
 - Developed and launched a City web page specific to invasives.
 - Developed a draft public ownership GIS layer.
 - Begun planning an invasives summit to be held in fall 2008.

Johnson Creek Watershed

- Johnson Creek Watershed: Participated in 2 community events, with a total of 650 participants: the Lents Resource Fair and Lents Community Housing Fair.
- Continued working with the Johnson Creek Watershed Council and streamside property owners to encourage watershed stewardship.
- Co-sponsored the Johnson Creek Watershed Council's 10th annual Johnson Creek Watershed-Wide Restoration Event, where about 400 volunteers planted more than 6,000 native plants, removed 8 tons of invasive plants, and hauled away 1 ton of trash from 14 sites.
- Gave presentations at the Lents Urban Renewal Advisory Committee and the East Portland Neighborhood Office; attended neighborhood association meetings in Lents to inform them about the Johnson Creek watershed restoration program and its projects.
- Conducted five public involvement events, with 150 people attending, for the East Lents Floodplain Restoration Project and the Brownwood phase of the East Powell Butte Floodplain Restoration Project.
- Supported environmentally friendly farming and wetland education programs at Zenger Farm, which is the site of a renovated farmhouse with a zero-net energy design and sustainable stormwater features. About 2,800 student visits were made.

Fanno and Tryon Creek Watersheds

- Hosted two Fanno and Tryon Creek pre-design open houses on December 3, 2007 and June 12, 2008. Sent four-page inserts in SWNI newsletter, reaching 10,000 homes, prior to each open house. Open houses were attended by 75 citizens, who provided 20 written comments on projects.
- Partnered with the Friends of Tryon Creek State Park and Tryon Creek Watershed Council to create displays to educate visitors about in-stream habitat enhancement projects such as the Highway 43 culvert retrofit and stream enhancement, tributary brush dam project and the Iron Mountain sewer protection and stream enhancement project. 10,000 visitors annually interact with the educational displays.
- Supported Tryon Creek Watershed Council activities, such as the native plant sale, community workshops, and restoration events.
- Hosted citizens at the SW Watershed Resource Center, located in the SW Community Center at Gabriel Park. Provided technical assistance and project support to neighborhood and Friends groups in Fanno and Tryon Creek Watersheds, including:

- Hosted 1,076 visitors at the Resource Center.
 - Supported various friends groups with support of 38 meetings and site tours for 215 participants.
 - Provided education programs for 208 children and 129 adults at Family Fun Night and by hosting school groups.
 - Attended 12 community events, reaching 827 participants.
 - Loaned tools to ten stewardship groups for 30 work parties, education events and clean ups.
- Developed and installed an educational sign and hosted a celebration for the completion of the 17th and Taylors Ferry Raingarden. Thirty people attended the celebration and many read about it in the SWNI newsletter. SOLV received a grant to work with neighbors in 2008/09 to continue the maintenance of the facility
 - BES partnered with East Multnomah Soil and Water Conservation District, Metro, and many community hosts to offer Naturescaping for Clean Rivers Program. The program offers four-hour workshops to teach participants to manage their property to use native plants, stop erosion and reduce chemical and water use. The program reached over 19,000 people at public events, and 846 participants attended workshops. The programs are offered throughout Portland and nearby suburbs. Participants can attend any workshop, regardless of location.
 - Partnered with Friends of Trees to support neighborhood trees crew leader training and volunteer plantings. The 76 crew leaders led 19 street tree planting events throughout the region. The volunteer plantings engaged 1,568 participants who contributed 11,242 volunteer hours. In addition to planting street trees, volunteers visit each planted tree twice during the summer to make sure homeowners are properly caring for their trees and the trees are thriving.
 - Partnered with SOLV, project Team Up to provide volunteer stream restoration projects (erosion reduction, invasive plant control, and native plantings) on private property at 13 sites in Portland. The project engaged 519 volunteers from scout groups, schools, volunteer organizations, and businesses in the Willamette, Johnson Creek, Fanno Creek, Columbia Slough, and Tryon Creek watersheds.
 - BES partnered with Portland Parks and Recreation to involve citizens in their local natural areas. Activities included invasive plant species removal, native plant installation, trail building, fencing sensitive aquatic resources, education for dog owners, and litter pickup.

Fanno Parks Project Summary

Restoration	
# Restoration Events	41
# Volunteers	475
# Volunteer Hours	1868
Outreach/Education	
# Outreach Events	3
# People Reached	~500

Willamette Watershed Parks Projects

Restoration	
# Restoration Events	27
# Volunteers	453
# Volunteer hours	1,687
Outreach/Education	
# Outreach/Ed Events	7
# People Reached	~680

- Under the “Dogs for the Environment” program, Parks & Recreation staff conducted active outreach and created educational materials for dog owners in natural areas. Education focused on water quality, interaction with wildlife, and dog/human health. Parks staff worked to bring new partner organizations to the program. Partners include Multnomah County Animal Services, Audubon Society of Portland, Oregon Humane Society, and the Portland Parks & Recreation Ranger Program.

Dogs for Environment

Outreach/Education	
# Outreach Events	3
# People Reached	~500

- BES and Portland Parks co-sponsored an Americorps member as a Stream Stewardship Coordinator (SSC) to engage citizens in project in Portland Parks natural areas. Thirty-one planting events were held, involving 647 students and 69 community volunteers in the Columbia Slough, Willamette, Fanno, Tryon, and Johnson Creek watersheds. The SSC also worked with Friends of Trees at 10 planting events, involving 77 community volunteers.
- BES and AmeriCorps’ Northwest Service Academy co-sponsored an Americorps member to serve as BES’s Stormwater Stewardship Coordinator. Coordinated multiple events focused on stormwater management and pollution prevention throughout the Willamette, Columbia Slough, Fanno, Tryon, and Johnson Creek watersheds. These included the Art of Stormwater art display, video showings, and distribution of fact sheets and brochures, and reached at least 1,500 people.

- Coordinated with stakeholders to implement Innovative Wet Weather Program projects:
 - Formed a public stakeholder group to help guide the SE Clay Green Street Project.
 - Worked with Friends of Trees to plant the Owens Corning Stormwater Project.

Community Stewardship Grants Program

BES's Community Watershed Stewardship Program awarded 13 stewardship grants totaling \$60,200 in fiscal year 2007-2008, involving approximately 2,300 participants. (Information from all grantees has not been received as of the writing of this report; not all grantees fully spent available grant dollars.)

2007-2008 CWSP Grantees by Watershed	
Project Title	Grant Amount
Columbia Slough	
Beaumont Learning Courtyard	\$ 5,000.00
Power Academy	\$ 5,000.00
Eyes on the Slough	\$ 4,500.00
St Andrew Stewardship Project	\$ 5,000.00
Rigler Outdoor Classroom	\$ 5,000.00
	\$ 24,500.00
Fanno/Tryon	
Interactive Educational Land Tour	\$ 3,500.00
PCC Restoration Sylvania Natural Area Park	\$ 5,000.00
Multnomah Village Park	\$ 4,500.00
	\$ 13,000.00
Johnson Creek	
Tideman-Johnson Stewardship	\$ 4,750.00
Alice Ott School	\$ 5,000.00
	\$ 9,750.00
Willamette River	
Pesticide-Free Parks	\$ 4,950.00
Terwilliger Interpretive Project	\$ 3,000.00
St Francis Onsite Stormwater Management	\$ 5,000.00
	\$ 12,950.00
	\$ 60,200.00

The Community Watershed Stewardship Program also awarded 20 mini grants totaling \$7,800 in fiscal year 2007-2008. Mini grants provided a variety of community groups and private property owners with native plant gift certificates to assist with riparian and upland restoration and revegetation projects.

CWSP Mini Grants 2007- 2008 by Watershed		
Watershed	Mini Grants	\$
Columbia Slough	1	\$ 300
Fanno / Tryon Creek	9	\$2,700
Johnson Creek	3	\$ 1,500
Willamette River	7	\$3,300
Mini Grant Program Total	20	\$7,800

- In partnership with Portland State University (PSU), BES offers a graduate research assistant (GRA) position to manage the grants program. The GRA assists grantees and also provides outreach to the community via the BES website and at events. The goal is to educate participants about stormwater issues and restoration opportunities, such as the grants program, for citizens to participate. Accomplishments include:
 - Received 10,569 hits on the grants web page.
 - Attended nine community events, such as the Mississippi Street Fair, Muddy Boots Festival, and Welcome the Rain!, reaching 723 people.
 - Presented at three national conferences, reaching 3,925 attendees.
 - Sent postcards describing the grants program to 800 community groups.
 - Conducted three grant information workshops in the community, describing the grants program and how to apply, reaching 14 participants.
 - Conducted two permit workshops for grantees, reaching 18 participants.
 - Worked with 16 PSU students during the Community Watersheds Capstone; educated 16 students and reached 18 community attendees.
 - Strengthened relationship with community partner PSU, resulting in the regional Magrath/Kellogg Foundation award and the national Jimmy and Rosalynn Carter Partnership Foundation award.
 - Worked with 8 PSU Community Development Colloquium students during the 2007-2008 academic year to create Portland Friends of Green Streets (FrOGS), a grass-roots group dedicated to promoting green infrastructure in Portland. 37 participants reached at initial event and biweekly membership meetings.

Regional Coalition for Clean Rivers and Streams

- Continued participation in the Regional Coalition for Clean Rivers and Streams, with the following activities:
 - Worked with a local advertising agency to develop and implement a multi-year public awareness campaign.
 - A cable television public awareness announcement was developed, produced, and aired for four weeks in late summer/early fall, reaching nearly 400,000 households in the Portland metro area.
 - The Coalition’s website was redeveloped throughout the winter/early spring to be more user-friendly, for a launch by summer 2008.
 - Water bill inserts carrying the Coalition’s messaging/imagery from the television public awareness announcement were distributed to 214,000 Portland ratepayer accounts from March-May 2008.

- Maintained a budget of \$72,000 per year for four years to educate the public about the impact stormwater runoff pollution has on the health of rivers and streams for people, fish, and wildlife.

Publications and Signage

- June/July/August 2007: A bill message (located on the bill itself) regarding bureau’s Clean River Rewards program and encouraging property owners to manage stormwater onsite was distributed to 214,000 accounts.
- September/October/November 2007: A bill insert titled “Floodplains, Watersheds, and Clean Rivers” was distributed to 214,000 accounts.
- December 2007/January/February 2008: A bill insert titled “Managing Stormwater the Natural Way” was distributed to 214,000 accounts.
- March/April/May 2008: A Regional Coalition bill insert with information and tips regarding stormwater runoff was distributed to 214,000 accounts.
- Installed interpretive signs at three Innovative Wet Weather Program (IWWP) sites.
 - Astor Elementary School
 - Metro Headquarters
 - Kelly Elementary
 - Taylors Ferry Stormwater Project
- Updated and posted fact sheets, brochures, and educational materials on the BES Sustainable Stormwater Management website. The materials included information about Green Streets, ecoroofs, stormwater management facility planting guides, green streets and other sustainable stormwater approaches. The website received over 102,000 views during FY07-08.
- Distributed a variety of educational materials at community meetings and events.
- Posted temporary informational signs on the Springwater Corridor Trail regarding construction of the Brownwood phase of the East Powell Butte Floodplain Restoration Project, which includes water quality elements.
- Produced and distributed project informational materials entitled “Stephens Creek Confluence Project,” “SW Texas Green Street,” and “Oaks Bottom Wildlife Refuge Projects.”
- Created two educational signs for River East’s stormwater management infrastructure in the Willamette Watershed.
- Completed and installed a Markham Rain Garden educational sign in the Fanno/Tryon Watershed.
- Completed and installed a Kelly School bioswale educational sign in the Johnson Creek Watershed.

Stormwater Advisory Committee

Met regularly (generally monthly) with the Stormwater Advisory Committee (SAC), a group of external stakeholders that reviews and makes recommendations on stormwater management issues and policies. During FY07/08, the SAC provided review of Stormwater Management Plan revisions and recommendations for modifications, input on implementation of the Green Streets Program, and review and comment on the 2008 Stormwater Management Manual (see ND-2). The SAC also met jointly with the Watershed Science Advisory Group (WSAG) to discuss implementation of the Portland Watershed Management Plan and merging of the two committees.

Coordination among City Programs

- Coordinated with other City projects and programs (e.g., Endangered Species Act Program, Willamette Stormwater Control Program, watershed programs) to integrate stormwater activities and messages.
- Participated in the Johnson Creek Interjurisdictional Committee to collaborate with staff from other Johnson Creek jurisdictions on water quality monitoring and grant and restoration opportunities.

PERFORMANCE MEASURES ¹

➤ Type of outreach and estimated number of people reached:

Type of Activity	Estimated Number of Participants
Clean Rivers Education Programs	33,000
Stewardship Activities/Community Events	18,000
Community Stewardship Grants Program	2,300
Naturescaping for Clean Rivers	846 workshop participants; 19,000 attending outreach events
Bill messages/inserts	Quarterly distribution to 214,000 accounts
Website visits	Assembly Program Curriculum: 6,540 Community Stewardship Grants Program: 10,569 Sustainable Stormwater Management Program: 102,000

¹ Performance measures are used to estimate the effectiveness of BMP implementation. They are identified for each BMP in the Stormwater Management Plan. The Annual Compliance Report includes other reporting elements in addition to the performance measures in order to describe the full extent of BMP implementation activities.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

The PI-1 activities that have proved successful will continue in FY 08/09, including stormwater education activities, community stewardship grants, participation in the Regional Coalition for Clean Rivers and Streams, watershed-specific education and stewardship activities, publications and signage, work with the Stormwater Advisory Committee, and coordination with other BES and City programs. Specific projected activities include:

Education

- Provide education outreach on the science of stormwater management to schools participating in the EPA Innovative Wet Weather Program stormwater demonstration and other bureau-sponsored projects.
- Continue science education outreach to community youth to increase students' knowledge and awareness of urban watershed and water quality issues, to foster a connection to local greenspaces and streams, and to educate youth about how they can protect their watersheds.

Regional Coalition for Clean Rivers and Streams Awareness Campaign

- Implement the public awareness messages that will be used by coalition members over the next three years.
- Launch and continue publicizing the Coalition's redeveloped website.

Committees

- Continue bimonthly Education Advisory Committee meetings to review and advise on public participation approaches and activities.
- Continue Stormwater Advisory Committee, or similar committee, meetings to provide review/comment and policy guidance on stormwater issues.

Publications and Signage

- Continue to produce publications, website materials, and signage to support program areas.

Coordination with Other Programs

- Continue to coordinate with watershed councils, friends groups, and other City bureaus.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

PI-2: Obtain public review and comment on revisions to the Stormwater Management Plan (SWMP).

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

During permit year 13, the City reviewed its best management practices and prepared a proposed revised SWMP for inclusion in Portland's permit renewal package submitted to DEQ on September 2, 2008. The following public review and comment activities occurred:

- The City's Stormwater Advisory Committee (SAC) provided review and comment on the proposed SWMP revisions at four SAC meetings from February through May 2008. The SAC previously provided extensive review and comment on the City's SWMP and Interim Evaluation Report from 2004 to 2006. Through that process, the SAC became familiar with the permit requirements and intent. This served as valuable background for its review of the 2008 proposed revisions.
- The public review and comment period did not occur until permit year 14 (July 1-31, 2008). However, the City (in conjunction with the Portland co-permittees) conducted a number of preparatory activities in permit year 13:
 - Developed a fact sheet/announcement about the SWMPs and the public review period, which was distributed through the following methods:
 - Mailed to an outreach database of over 1,700 names (joint City, Port, and County list) on June 4.
 - E-mailed to the City's Office of Neighborhood Involvement notification list on July 1.
 - E-mailed to the City's Stormwater Advisory Committee and *Stormwater Management Manual* interested parties lists on July 1.
 - Placed a public notice in the *Oregonian* on June 23, 2008, and in the *Daily Journal of Commerce* on June 24, 2008 to announce the review period.
 - Activated the PortlandOnline webpage on June 5 to provide background information about the MS4 permit and SWMPs and identify opportunities for public review and comment.
 - Provided a central telephone message line June 5 to receive inquiries and requests for documents. The phone number was identified on the websites and fact sheet.
 - E-mailed notice of the public comment period and the link to the SWMPs to the Department of Environmental Quality (DEQ) on July 1, for the purpose of having DEQ notify other interested persons.

PERFORMANCE MEASURES

- **Summary of SWMP public review process, including description of outreach efforts to interested parties list and number of comments received during public review process.**

The information provided above about the SWMP public review process during permit year 13 is summarized as follows:

- Obtained SAC review and input at four meetings.
- Mailed fact sheet to data base of 1,700 and distributed fact sheet via email.
- Provided public notification in two newspapers.
- Activated a webpage.
- Provided a central telephone message line.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 07-08)

- The public review and comment period for the City's SWMP occurred in July 2008 (the beginning of permit year 14). DEQ will also provide a public comment and review period for the proposed permit and SWMP; the dates are not yet known.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

OM-1: Operate and maintain components of the municipal separate storm sewer system (MS4) to remove and prevent pollutants in discharges from the MS4.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

Municipal Separate Storm Sewer System Assessment, Cleaning, and Maintenance

- BES made 6,178 inspection/maintenance visits to various locations citywide (multiple visits to some locations after major rain events). Accomplishments by watershed are provided under Performance Measures, below.
- BES cleaned approximately 10,800 inlets (citywide). Accomplishments by watershed are provided under Performance Measures, below.
- BES cleaned approximately 89,886 linear feet of ditch and 3,836 linear feet of culvert. Accomplishments by watershed are provided under Performance Measures, below.
- BES inspected all 177 public stormwater management facilities (SMFs) twice to document the condition of each facility and identify needed cleaning and repairs. Cleaned 41 SMFs, repaired 14 SMFs. Cleaning/repairs by watershed are provided under Performance Measures, below.
- BES repaired or constructed 319 inlets, 1800 linear feet of inlet lead, and 4,130 linear feet of culvert. Repairs/construction by watershed are provided under Performance Measures, below.
- Stormwater O&M (BES) prioritizes ditch maintenance work to occur during the dry season and continues to use methods to minimize erosion and slow flows during and after maintenance.
- BES developed criteria to map watershed maintenance priority areas for use by inspection and maintenance crews. This data will lead to ranking certain facilities a low, medium, or high priority for future preventative maintenance work.
- Portland Office of Transportation Maintenance Operations (PDOT Maintenance Operations)² staff continue to look at piloting new materials and applications directed toward enhancing water quality. Pilot actions include:
 - Alternatives to galvanized metal. The PDOT Maintenance Operations Stormwater Group switched from using galvanized metal to stainless and case-hardened steel and corrugated plastic pipe to screen beavers from pipes.
 - New equipment and materials. PDOT Maintenance Operations began using eco-stakes for easier installation of bio bags. PDOT Maintenance Operations also began installing

² Formerly called the Bureau of Maintenance.

downpipes and splash pads for stormwater outfalls on slopes where erosion is a concern. In addition, crews began to use environmentally friendly hydraulic fluid and bio-fuel.

- Erosion control. Crews have devised work-specific practices, such as using temporary awnings over work sites and temporary bins for holding spoils during hand excavations on steep slopes and installing 6- x 9-inch rock to slow flow and trap sediment.
- Ditch reconfiguration. PDOT Maintenance Operations conducted trials to retrofit steep ditches to stair-stepped mini-basins where possible.
- Demonstration "green ditches" project. The stormwater crew designed four "soft" demonstration treatments to alleviate, minimize, and control erosion on steep (8 percent to 12 percent of slope) ditches on SW Alice St. in the Tryon Creek headwaters. Treatments included combinations of leaf mulch and seed and various check structures and seed. The four ditch treatments were monitored over fall, winter, and spring. Findings resulted in recommendations to armor ditches with large rock or convert the ditches to permeable shoulder and install detention facilities downline to meter flow releases.

Training

- The 11-member PDOT Maintenance Operations stormwater crew received training in how to install, monitor, and maintain erosion control media in ditches.

PERFORMANCE MEASURES

- **Location (watershed), type, and number (and percentage of total) of facilities cleaned; frequency of cleaning by type; amount of materials removed**

Inlets Inspected/Maintained and Cleaned							
	Columbia Slough	Fanno Creek	Johnson Creek	Tryon Creek	Willamette River	Rock Creek	TOTAL
Inspected/Maintained	180	1,202	330	389	3,850	227	6,178
Cleaned (Hansen data only)*	2,913	17	1904	15	1,967	17	6,833

* Information on inlets cleaned was pulled from both Maximo (10,800 inlets) and Hansen (6,833 inlets). Only the information from Hansen can be separated out by watershed.

Ditches and Culverts Cleaned						
	Columbia Slough	Fanno/Rock Creek	Johnson Creek	Tryon Creek	Willamette River	TOTAL
Feet of Ditch Cleaned (linear feet)	944	39,027	4,776	21,642	21,199	89,886
Feet of Culvert Cleaned (linear feet)	355	644	92	484	1906	3,836

Public Stormwater Management Facility Inspections						
	Columbia Slough	Fanno/Rock Creek	Johnson Creek	Tryon Creek	Willamette River	TOTAL
Number Inspected	56	41	41	11	28	177

Note: Each facility was inspected twice.

Public Stormwater Management Facilities Cleaned / Repaired

Type of Facility Cleaned / Repaired	Columbia Slough	Fanno Creek	Rock Creek	Johnson Creek	Tryon Creek	Willamette River	TOTAL
Dry Extended Detention Pond	0/0	0/0	0/0	0/5	2/1	0/0	2/6
Forebay	1/0	0/0	0/0	0/0	0/0	0/0	1/0
Greenstreet Planter	0/0	0/0	0/0	0/0	0/0	0/1	0/1
Swale	0/1	0/1	0/0	0/0	0/1	1/0	1/3
Sedimentation Structure	8/0	0/0	5/0	11/0	0/0	7/0	31/0
Wet Extended Detention Pond	1/2	0/0	0/0	1/1	0/0	0/0	2/3
Const. Treat. Wetland	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Sedimentation Box	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Greenstreet Swale	0/0	3/0	0/0	0/0	0/0	0/1	3/1
Sand Filter	1/0	0/0	0/0	0/0	0/0	0/0	1/0
Totals Cleaned / Repaired	11/3	3/1	5/0	12/6	2/2	8/2	41/14

Percent of all public stormwater management facilities cleaned: 23 %

Repair or Construction of Inlets, Inlet Leads, and Culverts							
	Columbia Slough	Fanno Creek	Johnson Creek	Tryon Creek	Willamette River	Rock Creek	TOTAL
Inlets	17	40	14	29	208	11	319
Inlet Leads (number of/linear feet)	312	100	211	36	1,093	48	1800
Culverts (number of/linear feet)	2,793	197	26	777	337	0	4130

Material Removed During Maintenance^a	
Watershed	Amount Removed (Tons)
Columbia Slough	35
Fanno Creek	1,145
Johnson Creek	177
Tryon Creek	802
Willamette River	785
Total	2,944
^a Material primarily from conveyance system cleaning (ditches, culverts)	

➤ **Number and type of training/educational sessions and number of participants**

- PDOT Maintenance Operations stormwater crew training on erosion control: 11 participants

Note: Training related to other operations and maintenance activities is identified under OM-2 and OM-3.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Establish priority preventative maintenance areas for various watershed and regulatory programs. Priority areas will be based on a variety of factors, including pollutant load, presence of sensitive fisheries, presence of treatment facilities in the catchment, and proximity to streams. These areas will be delineated on the City mapping system and rankings within the Hansen system.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

OM-2: Operate and maintain components of public rights-of-way, including streets, to remove and prevent pollutants in discharges from the municipal separate storm sewer system.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

- The Bureau of Maintenance continued to implement BMPs within the right-of-way to protect water quality. This includes:
 - Following ODOT's *Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices*.
 - Tracking and removing abandoned erosion control devices.
 - Using the trenchless liner repair system.
 - Using bio-pillows for sediment control on impervious surfaces and hydrocarbon-absorbing booms to trap sediment, oil, and grease while cleaning the grinding machine.
 - Using low-disturbance sign installation methods to avoid or minimize digging.
 - Using mild cleaners, with no solvents, to clean signs.
 - Monitoring weather conditions during asphalt grinding
 - Hand-applying asphalt to prevent these materials from entering the storm drain system
 - Placing bio pillows and oil-absorbent booms before entering storm drains.
 - Using water-based asphalt emulsions and biodegradable asphalt release agents.

Street Sweeping

- Approximately 2,085 miles of streets were swept within the City of Portland in FY07-08. Of this citywide total, approximately 368 miles of the swept streets drain to the MS4 or to surface water. A breakdown of miles swept by watershed is provided under Performance Measures, below.
- PDOT Maintenance Operations collected approximately 4,916 cubic yards of debris and 237 cubic yards of leaf debris from streets that drain to the MS4 or directly to surface waters. Estimated amounts collected in each watershed are included under Performance Measures, below.
- Continued to work with other transportation agencies in a pilot project to study the reuse of street sweepings. The goal is to remove this waste stream from landfills by converting it into a beneficial product. A representative of PDOT Maintenance Operations is participating in DEQ's Solid Waste Beneficial Reuse Committee.

Training

- Four members of the PDOT Maintenance Operations pesticide spray crew attended two days of training by the Oregon Department of Agriculture on managing pesticides in the public right-of-way.
- The PDOT Maintenance Operations mowing and brushing group (15 employees) reviewed equipment cleaning operations to avoid spreading invasive plants in the right-of-way.

PERFORMANCE MEASURES

➤ **Number and type of training/educational sessions and number of participants**

- Pesticides management: 4 PDOT Maintenance Operations employees
- Equipment cleaning operations: 15 PDOT Maintenance Operations employees

Note: Training related to other operations and maintenance activities is identified under OM-1 and OM-3.

➤ **Location (by watershed), miles (and percentage of total), and type of streets cleaned; frequency of cleaning by type**

- Approximately 2,085 miles of streets were swept within the City of Portland. This represents 70 percent of the 2,985 total street miles in the City. As shown in the following table, 368 miles of streets that drain to the MS4 or to surface waters were swept. This represents 52 percent of the 707 total miles within the MS4 area. (Note: Mileage refers to street miles and does not reflect frequency of sweeping.)

FY07-08 Miles of Street Swept by Watershed and Street Type		
Watershed	Street Type	Sweeping Miles
Columbia River	Regional Trafficway	-
	Regional Trafficway and Major City Traffic Street	-
	Major City Traffic Street	-
	District Collector Street	-
	Neighborhood Collector Street	-
	Traffic Access Street	-
	Local Service Traffic Street	-
	N/A	-
	Unknown	-
	<i>Total by Watershed</i>	
Columbia Slough	Regional Trafficway	-
	Regional Trafficway and Major City Traffic Street	8.84
	Major City Traffic Street	12.899
	District Collector Street	7.37
	Neighborhood Collector Street	19.74
	Traffic Access Street	-
	Local Service Traffic Street	61.43
	N/A	0.02
	Unknown	5.29
	<i>Total by Watershed</i>	

Fanno Creek	Regional Trafficway	0.14
	Regional Trafficway and Major City Traffic Street	-
	Major City Traffic Street	10.04
	District Collector Street	5.54
	Neighborhood Collector Street	3.04
	Traffic Access Street	-
	Local Service Traffic Street	44.09
	N/A	-
	Unknown	-
<i>Total by Watershed</i>		62.85
Johnson Creek	Regional Trafficway	-
	Regional Trafficway and Major City Traffic Street	0.14
	Major City Traffic Street	1.00
	District Collector Street	0.40
	Neighborhood Collector Street	3.75
	Traffic Access Street	-
	N/A	-
	Local Service Traffic Street	20.25
	Unknown	-
<i>Total by Watershed</i>		25.54
Rock Creek	Regional Trafficway	-
	Regional Trafficway and Major City Traffic Street	-
	Major City Traffic Street	0.46
	District Collector Street	-
	Neighborhood Collector Street	3.48
	Traffic Access Street	-
	Local Service Traffic Street	12.03
	N/A	-
	Unknown	-
<i>Total by Watershed</i>		15.96
Tryon Creek	Regional Trafficway	-
	Regional Trafficway and Major City Traffic Street	-
	Major City Traffic Street	2.94
	District Collector Street	4.28
	Neighborhood Collector Street	2.68
	Traffic Access Street	-
	Local Service Traffic Street	19.22
	N/A	-
	Unknown	-
<i>Total by Watershed</i>		29.11

Willamette River	Regional Trafficway	2.30
	Regional Trafficway and Major City Traffic Street	6.93
	Major City Traffic Street	13.53
	District Collector Street	6.89
	Neighborhood Collector Street	18.63
	Traffic Access Street	18.37
	Local Service Traffic Street	51.35
	N/A	0.69
	Unknown	-
<i>Total by Watershed</i>		118.69
MS4 Area Total		367.75

- Arterials are swept 11 to 12 times a year, and residential streets are swept 4 to 6 times a year.
- Approximately 4,916 cubic yards of debris and 237 cubic yards of leaf debris were collected from streets that drain to the MS4 or directly to surface waters. The following table shows estimated amounts collected in each watershed.

Summary of Street Sweeping/Leaf Collection by Watershed ^a				
Location	Miles Swept ^{b,c}	Material Collected (cubic yards)	Leaf Collection Miles	Leaf Collection (cubic yards)
Columbia Slough	115.59	1,546	0	0
Johnson Creek	25.53	341	0	0
Fanno Creek	62.85	840	2.09	140
Tryon Creek	29.11	389	0	0
Willamette River	118.69	1,587	1.45	97
Rock Creek	15.96	213	0	0
Totals	367.74	4,916	3.54	237
^a Information is for streets that drain to the MS4 or to surface water.				
^b Includes leaf collection miles.				
^c Miles swept are route miles and do not account for frequency of sweeping.				

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue to evaluate new materials and processes, pilot test tools and techniques, and monitor developments in related fields.
- Continue to invite guest speakers and host vendor demonstrations to keep apprised of new materials and practices.
- Evaluate using watershed priority maps to reprioritize street sweeping to high-needs areas in the MS4 system.

- Continue the current street sweepings pilot project and coordination with DEQ and BES for approval of recycled material.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

OM-3: Operate and maintain other City facilities and infrastructure (not included in OM-1 or OM-2) to remove and prevent pollutants in discharges from the municipal separate storm sewer system.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

Portland Office of Transportation Maintenance Operations (PDOT Maintenance Operations)

- Pollution Prevention (P2) teams at PDOT Maintenance Operations continued to meet twice a month to evaluate and track maintenance procedures, pilot test new products and techniques, evaluate work processes, and monitor developments in related fields. Topics relevant to stormwater quality protection included:
 - Water quality protection needs associated with vehicle and equipment washing.
 - Labeling secondary containers.
 - Management of vehicle and equipment leaks in maintenance yards and parking lots.
 - Water saws and managing saw slurry.
 - The PDOT Maintenance Operations *Best Management Practices for Pollution Prevention and Water Quality Protection*.
 - The regulatory context for stormwater management in maintenance yards and parking lots.
 - Evaluation of alternatives to treated wood.
 - Parks' Integrated Pest Management Program, including activities being applied at city golf courses.
 - GreenStreets bioswales and other facilities.

- PDOT Maintenance Operations cleaned all stormwater and water quality facilities in maintenance yards and lots and continues to implement Phase I stormwater controls. Phase I encompasses installation, inspection, and maintenance of filtration and absorbent media at selected stormwater inlets. Specific activities included:
 - Maintain the stormwater filtration system under waste drop boxes, equipment parking areas, and other selected inlets vulnerable to leaks and spills.
 - Store most collection bins for recycled materials indoors under cover.
 - Clean out subsurface vaults below the sweeper debris pile approximately two times per year.
 - Clean out debris from sweeper wash facility vaults once each month or two.
 - Clean debris vaults at the truck bed washout facility as needed every few months.

- PDOT Maintenance Operations Group's environmental program specialist continued to develop a stormwater management plan to prevent and reduce pollution from maintenance lots and yards (13 acres). Phase I (the first inspection and cleaning cycles) was completed, and ongoing maintenance will continue.

- PDOT Maintenance Operations continued water quality-related training, including the following:
 - Managing rinse water from steam cleaning operations. Three tool room employees received training on acceptable cleaning products and means to filter rinsate for steam-cleaning operations that do not drain to water quality treatment facilities.
 - Housekeeping in maintenance yards and parking lots. The Pollution Prevention Managers team (seven people) held several meetings that focused on needs for housekeeping and planning to prevent stormwater pollution from various activities and materials in the maintenance lots and yards.
 - Washing facilities. An Environmental Group employee observed operations at permitted, private-sector concrete truck washout and equipment wash facilities, as well as at those operated by ODOT and the Portland Water Bureau, and shared this information with the seven Pollution Prevention managers.
 - Sweeping truck rails, sides, aprons. Approximately 200 Street Systems and Environmental Systems crew members received a refresher training about keeping truck rails, aprons, and sides clean before transporting loads in the street.
 - Managing saw slurry. PDOT Maintenance Operations staff cross-trained approximately 100 crew members on managing saw slurry with a range of different equipment.
 - NW Environmental Professionals' annual conference. One staff member attended training workshops on facility stormwater audit, stormwater management planning, and HazMat management.
 - Orientation for new employees. The orientation includes a one-hour overview of the bureau's environmental program, highlighting the commitment to water quality, pollution prevention, alternative energy, and environmental awareness in the workplace. This overview also includes a training video on municipal best management practices and stormwater pollution prevention. Thirteen new PDOT Maintenance Operations employees were oriented during the past fiscal year.
- The Sunderland Recycling Facility recycled 56,926 cubic yards of leaves, concrete, and asphalt. PDOT continues to look at waste streams for reuse or recycling opportunities. In the last year, PDOT fine-tuned a new product: blended soil. This product combines dirt, generated by the rock-crushing operation, and compost, and has good porosity and high organic content. In addition to using this product in maintenance repair projects, it is used in stormwater treatment systems and in the planters being placed along the Portland Mall light rail project.
- PDOT Maintenance Operations promotes its recycling activities to ensure the program is understood and supported by stakeholders throughout the City. Outreach and marketing efforts during FY07-08 included numerous presentations (e.g., to American Public Works

Association's Fall Conference, Bureau of Development Services employees, and PDOT's Green Team); an article in the national publication, *Public Works Magazine*; updating of the facility's website; inclusion in Metro's website as a compost vendor; and compost donation to six nonprofit organizations for "green" projects.

Water Bureau

- Continued to implement a program that requires the Water Bureau to submit requests to the Bureau of Environmental Services (BES) for discharges of potable water from flow tests of hydrants and tank and reservoir drains. Discharges are approved on a case-by-case basis with a letter of authorization. The authorization requires BMPs to reduce the impacts of flow rate, volume, and suspended solids from these activities, in addition to the state guidelines for chlorinated discharges. A report is required for each discharge in order to track volume and respond to any complaints.
- Continued to inventory discharges at various facilities.

Bureau of Parks and Recreation

- Continued to empty (monthly) the sump at Mt. Tabor Yard that captures the grass and dirt of Parks mowers when they clean off at the end of shift, to help prevent that material from entering the storm drain system.
- Continued to maintain the new drip irrigation system in Mt. Tabor Nursery, as well as turf strips to prevent erosion from watering and harvesting equipment.
- Continued program with vendors to provide pesticides at individual golf course sites on an as-needed basis. This approach reduces storage needs for pesticides and also shifts any transportation risks to the vendor, who has more appropriate equipment and training.
- Continued testing nutrient levels and the presence of pesticides in surface waters for all City golf courses on a twice-annual basis. Results from testing continue to show that pest management and fertilization activities are not presenting a negative impact to aquatic habitat and ESA-listed species.
- Continued a surface water quality testing sampling program to evaluate any impacts from herbicide use in revegetation/ invasive plant removal activities. Data have been collected, and a report will be issued in late 2008.
- Continued the use of a specially formulated slow-release fertilizer on park turf, which possesses an ideal formulation of components that reduces leaching and wasted elements in runoff. Water quality testing results confirm the efficacy of this formulation.
- Expanded pilot testing the use of special equipment for precise application amounts, timing, and distribution of fertilizer on golf course fairways and greens as part of an ongoing program. The program now includes all five City golf courses.

- Completed the three-year Integrated Pest Management (IPM) enhancement program to formally assess and document alternative pest management techniques, materials, and methods in trials at various locations in City parks, community gardens, golf courses, and natural areas. A report will be issued in late 2008.
- Continued to examine maintenance activities as part of annual compliance requirements for continued Salmon Safe certification. This included the IPM enhancement project and studying alternatives to pesticides.
- Continued a public/private partnership to fund new practices at key park sites to renovate athletic fields. These practices include aeration and overseeding to reduce fertilizer use and increase water infiltration.
- Continued to perform aeration, topdress, and overseed activities on 28 highly used sports fields at 20 different sites work to achieve structural soil changes that improve plant health and optimize use of water and fertilizers.
- Continued work to achieve structural soil changes that improve plant health and optimize use of water and fertilizers, primarily in sports fields, but also in other areas.
- Continued to use the machine shop at Mt. Tabor Yard as one of the bureau's recycling collection points. Used oil, used antifreeze, waste paper, and scrap metal are collected and sent to a recycler. All cleaning done in the machine shop uses only a non-butyl degreaser, and the solvent tank uses a solvent reclaimer cleaning unit so no waste solvent is produced. Cleaning of brake parts and spot cleaning use bulk solvent and a mister can that uses compressed air for the propellant, eliminating aerosol cans and their propellant.
- PP&R received \$154,000 in one-time money to purchase equipment to connect additional parks to the Maxicom irrigation system. PP&R has upgraded and connected 10 additional parks and has supplies for approximately 25 more parks that will be connect throughout the next year. There has been a water cost savings of approximately 20 percent by having the systems managed centrally and tied to weather stations. Parks connected to the Maxicom system this year include: Earl Boyles, Fernhill, McCoy, Sewallcrest, Lillis-Albina, Lincoln, Portland Heights, George and Harrison.
- PP&R built a bioswale to catch runoff water from a bed that used to run down a road at the Mt. Tabor Nursery.

Other

- BES, the Fire Bureau, and General Services continued working together on the City's fire station seismic upgrade to incorporate environmental issues. Specifically, all upgrades include washing areas that discharge to the sanitary system, with appropriate pretreatment. This eliminates discharges of wash water to City storm or ground disposal systems. To date, 24 remodeled stations and 5 new stations have been completed with indoor vehicle wash areas and oil/water separators. Three additional stations will have vehicle wash areas with an

oil/water separator when built or remodeled. BES continues to review new stations and remodeled stations' plans as they proceed through the building permit process. All stations are designed to incorporate many environmental components to achieve and exceed stormwater quality goals.

- The Toxics Reduction Strategy Steering Committee, comprising key City and County staff with relevant expertise and responsibilities, as well as external community partners, met approximately every other month. Several work groups were formed to:
 - Develop low-mercury fluorescent light tubes procurement specifications and recycling/disposal procedures. Recommendations have been made, and the City is working with the Oregon Department of Administrative Services to incorporate the specifications into light and ballast procurement contracts that are under development.
 - Outline the scope and resource needs to conduct a citywide (and countywide) chemical and toxics inventory. Recommendations have been made to conduct an inventory using a new software package. Funding opportunities are being pursued to implement the recommendations.
 - Develop a comprehensive mercury reduction strategy and work plan (for city and county operations). A cursory inventory of where mercury is found in City and County operations has been completed, resulting in several new sources being identified. Mercury reduction actions have been prioritized and will be implemented in the coming years.

- The City's Sustainable Procurement Strategy has been in effect since 2002. Under this strategy, City bureaus employ green purchasing practices in order to spend public funds on goods and services that minimize negative environmental impacts, are fair and socially just, and make economic sense, both now and in the long term.

PERFORMANCE MEASURES

➤ Number and type of training/educational sessions and number of participants

- PDOT Maintenance Operations Pollution Prevention Team training twice monthly, including the following topics:
 - Water quality protection needs for vehicle and equipment washing
 - Labeling secondary containers
 - Management of vehicle and equipment leaks
 - Water saws and managing saw slurry
 - BMPs
 - Regulatory context for stormwater management
 - Evaluation of alternatives to treated wood.
 - Integrated Pest Management Program
 - GreenStreets bioswales and other facilities.

- PDOT Maintenance Operations water quality-related training for approximately 319 employees
- PDOT Maintenance Operations orientation training for 13 new employees

Note: Training related to other operations and maintenance activities is identified under OM-2 and OM-3.

➤ **Location (watershed), type, and number of O&M changes made to City facilities and properties.**

- PDOT Maintenance Operations cleaned all stormwater and water quality facilities in maintenance yards and lots and continued to install, inspect, and maintain filtration and absorbent media at selected stormwater inlets. (Citywide)
- To date, 24 remodeled fire stations and 5 new stations have been completed with indoor vehicle wash areas and oil/water separators. (Citywide)

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

PDOT Maintenance Operations

- Stormwater management in maintenance lots and yards:
 - Continue to develop a stormwater management plan for maintenance lots and yards. Phase II includes the upgrade of selected stormwater facilities, and Phase III includes the acquisition of capital funds for larger stormwater investments.
- Vehicle and equipment washing:
 - Reconfigure the facility where street sweepers are rinsed to accommodate new sweepers and improve treatment of rinse water. Move other wash activities to the truck wash rack in Albina Yard where there is an effective system of wash water treatment. Encourage the use of commercial wash facilities for vehicles.
 - Perform concrete truck wash out at an approved facility, or develop an agreement to wash out at a permitted facility.
- Outdoor storage of materials: Move treated wood products and galvanized materials indoors under cover, or provide outdoor cover, such as tarps, to keep leachate from these materials from entering the storm drain system. Research the cost of design and construction of additional pole roofs to cover granular materials in outdoor storage. Research the cost of providing cover for uncovered outdoor garbage drop boxes. Review containment needs for fluids stored out of doors.
- Training: Train representatives from each working section to be trainers for their sections.

- Continue the outreach and promotion of the PDOT Maintenance Operations recycling program.

Water Bureau

- Continue to inventory discharges from Water Bureau activities.
- Continue to refine the process of requesting and approving discharges to the storm sewer system for other Water Bureau discharges as they are identified.

Bureau of Parks and Recreation

- Continue to examine maintenance activities as part of annual compliance requirements for continued Salmon Safe certification.
- Evaluate the hazardous material spill response policy and training process and develop a plan for a new training schedule.
- Continue the ongoing program to test nutrient levels and the presence of pesticides in surface waters for all City golf courses on a twice-yearly basis.
- Compile and interpret data and issue a formal report for the three-year Integrated Pest Management (IPM) enhancement program.
- Continue to connect irrigation to the Maxicom system to reduce water usage on park sites.

Other

- Continue to install vehicle wash areas with oil/water separators as fire stations are built or remodeled.
- Continue to implement the three identified Toxics Reduction Strategy actions; determine additional actions to be implemented.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

IND-1: Implement the Industrial Stormwater Management Program to control the discharge of pollutants from industrial and commercial facilities (both existing and those undergoing changes in operations) to the municipal separate storm sewer system.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

The Industrial Source Control Division (ISCD) in BES conducts most of the activities related to this BMP.

- Inspected, sampled, and administered the permits for 143 industries (and associated tenants) with stormwater discharge to the MS4. Eight permits were terminated midway through the fiscal year. Continued to perform annual compliance inspections and additional inspections, if warranted, to provide technical assistance or assess BMP implementation. More detailed information about these permits is included under Performance Measures, below.
- Under a memorandum of agreement with DEQ, administered 95 additional permits for facilities not located in the MS4. Most are permits for direct dischargers, although some discharge to the Port of Portland's system or the Multnomah County Drainage District.
- Continued to perform inspections and evaluate the need for stormwater permits for non-permitted industries in the MS4 and outside the MS4. Performed 281 inspections of permitted and non-permitted facilities during permit year 13. Identified BMPs at these industries to minimize or remove exposure of industrial activities to stormwater. Required three facilities to apply for a stormwater permit.
- Collected and analyzed five samples from four permitted and non-permitted industries for investigative purposes. Continued to monitor a selected outfall basin to evaluate the long-term effectiveness of the Industrial Stormwater Program as part of the MS4 land use monitoring program. (See MON-1.)
- Continued to locate and map non-City outfalls to receiving streams from all industries and businesses located in the riparian area and to identify the sources that drain to these outfalls. This included heavy efforts in the Columbia Slough and Willamette River Watersheds for the identification of direct discharges. Significant improvements were made to the Willamette River dataset.
- Continued to re-inspect industries that were previously identified as having no exposure and were not required to apply for a permit. The inspections are conducted on a five-year cycle. Industries are now being issued a no exposure certification (NEC) in lieu of a permit. The program will allow the City to effectively track these facilities. It also requires facilities to notify the City and/or DEQ if site conditions change, resulting in exposure of industrial activities to rainfall and stormwater runoff. The facilities would then be required to apply for a permit. Of the 13 industries that had a NEC expiring in FY 07/08, 3 were either no longer in business or had moved. The City reissued the NEC to 8 facilities and issued new NECs to another 9 facilities.

- Continued to implement activities in the following categories of industrial controls: wastewater discharge permits, accidental spill prevention plans, Pollution Complaint Program, Buildings Plan Review Section, and Fire Bureau’s SARA Title III facility review.

PERFORMANCE MEASURES

- **Location (by watershed), number, and type of existing permits managed by the Industrial Stormwater Management Program.**

Table IND-A provides information about existing permits.

Table IND-A Location (By Watershed), Number, and Type of Existing Permits with Discharges to the MS4 Managed by the Industrial Stormwater Management Program in FY 07/08			
Permit Type /Number of Permits Managed			
Location	1200Z	1200COLS	TOTALS
Willamette River	61	NA	61
Columbia Slough	NA	68	68
Johnson Creek	3	NA	3
Fanno Creek	0	NA	0
Tryon Creek	0	NA	0
Other (Columbia R.)	3	NA	3
TOTALS	67	68	135

- **Location (by watershed), number (and percentage of total), and frequency of inspections of permitted facilities.**

Table IND-B summarizes the location (by watershed) and number (permitted and non-permitted) of inspections for facilities that discharge to the MS4. Table IND-C shows similar information for facilities that discharge to other than the City’s MS4.

Table IND-B			
Number of Industrial Stormwater Inspections for Facilities that Discharge to the City's MS4			
INSPECTION TYPE:	Permitted	Non-Permitted	TOTALS
Willamette River	69	29	98
Columbia Slough	46	17	63
Johnson Creek	4	1	5
Fanno Creek	0	0	0
Tryon Creek	0	0	0
Other (Columbia R.)	3	0	3
TOTALS	122	47	169

Table IND-C			
Number of Industrial Stormwater Inspections for Facilities that Do Not Discharge to the City's MS4			
INSPECTION TYPE:	Permitted	Non-Permitted	TOTALS
Willamette River	31	20	51
Columbia Slough	32	20	52
Johnson Creek	3	1	4
Fanno Creek	1	0	1
Tryon Creek	0	0	0
Other (Columbia R.)	3	1	4
TOTALS	70	42	112

Table IND-D shows the frequency of inspections of permitted facilities that discharge to the MS4. In general, permitted industries are inspected once per year. However, because of reduced staff resources and staffing changes throughout FY 07/08, not all inspections were accomplished.

Table IND-D				
Inspection Frequency for Permitted Facilities Discharging to the City's MS4				
Location	Number Facilities Not Inspected	Number Facility Inspections*	Number Facilities Inspected More than Once	Percent of Total Number of Permitted Facilities Inspected
Willamette River	0	69	5	100
Columbia Slough	31	46	6	65
Johnson Creek	0	4	1	100
Fanno Creek	No permitted facilities to MS4			NA
Tryon Creek	No permitted facilities to MS4			NA
Other (Columbia R.)	0	3	0	100
TOTALS	31	122	12	
* Based on totals in Table IND-B.				

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue to inspect all permitted industries in the City once per year, and conduct sampling as needed.
- Continue to inspect non-permitted industries discharging to the MS4 to evaluate the need for permits.
- Continue to locate and map non-City outfalls in the Columbia Slough and Willamette River Watersheds and identify the sources to these outfalls.
- Continue to work with permitted industries to remove exposure to the extent that they can qualify for no exposure certification.
- Continue to work with sites to contain their stormwater discharge onsite, where applicable.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

IND-2: Provide educational programs and materials and technical assistance to reduce industrial and commercial pollutant discharges to the municipal separate storm sewer system.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

Eco-logical Business Program

- Continued to work with the Regional Pollution Prevention Outreach Team and Automotive Eco-Logical Advisory Subcommittee for the Portland metropolitan region to certify automotive repair and service shops. By the end of permit year 13, 30 shops were certified in the City of Portland, including 7 City-owned garages.
- Reformatted the automotive checklist and increased the number of programmatic requirements.
- Continued a promotional campaign to raise awareness and communicate the importance of supporting auto shops that operate environmentally responsible business practices. The campaign used newspapers, the Redirect Guide, the Chinook Book, and local news advertising to promote the Eco-logical Business message.
- Continued implementing the Eco-logical Business Program for the landscape services sector. Certified three landscape designers, two full-service firms and one specialty organics firm that all do work in the City of Portland.
- Continued participation in local environmental and neighborhood events, including the annual sustainability fair and the greener home and garden show, to promote use of certified automotive and landscape businesses.

BEST Business Center

- The BEST Business Center assists Portland businesses with resources and information to help them green their operations. The BEST Business Center is run by the Office of Sustainable Development, in partnership with the Portland Water Bureau, Portland Development Commission, Metro, Pacific Power, and Portland General Electric. Each year, OSD recognizes Portland's most sustainable businesses with the BEST Awards. In 2008, eight businesses received the BEST Award for their efforts to reduce waste and toxics, conserve energy, develop green products and services, and promote sustainable food systems.

Columbia South Shore Well Field Wellhead Protection Program

- Completed the fifth year of providing education and outreach to affected residents and businesses and one-on-one technical assistance to businesses to help them comply with requirements of the Columbia South Shore Well Field Wellhead Protection Program. Program requirements include structural and operational BMPs to reduce the occurrence of spills and minimize spill impacts. Portland's program is administered by the Portland Water

Bureau, with inspections conducted bi-annually by Portland Fire inspectors. Public outreach by the Portland Water Bureau and Columbia Slough Watershed Council during permit year 13 included:

Technical Assistance to Regulated Businesses:

- 22 phone consultations
- 10 site visits
- 11 articles in Columbia Corridor Association newsletter
- Two fire inspector trainings
- Completion of Program Implementation Guide
- Distribution of spill kits, required signs, and secondary containment pallets
- Multiple presentations at Columbia Corridor Association (CCA) breakfast forums about the groundwater protection program
- Maintenance of the CCA and PortlandOnline webpage on the protection program and requirements.

Public Outreach

- Slough School - groundwater module: 219 students
 - Groundwater 101: 42 participants
 - Subs on the Slough: 31 participants
 - Cycle the Well Field: 30 participants
 - Aquifer Adventure: 406 participants
 - Explorando: 540 participants
 - Clean Water Festival: 135 students
 - Metro Hazardous Waste Round-up (no numbers available)
 - Other Events with Groundwater Content (Regatta, Awards Celebration, Migratory Bird Festival, Slough and Wetlands 101)
- Total participants/contacts: 1,924

Coordination

- One coordination meeting with program stakeholders, including program staff and fire inspectors from the cities of Portland, Gresham, Fairview, the Columbia Slough Watershed Council, and CCA, to improve coordination and information sharing among program participants.

PERFORMANCE MEASURE

➤ **Type of outreach and estimated number of people reached**

Type of Outreach and Estimated Number of People Reached	
Type of Activity	Number of Participants
<p>Eco-logical Business Program</p> <ul style="list-style-type: none"> • Businesses certified (within City of Portland) • Promotional campaign to promote the Eco-logical Business message. 	<p>Total to date since program implemented: Automotive repair and service shops: 30 Landscape services: 6</p> <p>Unknown</p>
<p>Columbia South Shore Well Field Wellhead Protection Program</p>	<p>22 phone consultations and 10 site visits to regulated businesses</p> <p>Public outreach to 1,924 participants/ contacts</p>
<p>BEST Awards</p>	<p>8 businesses</p>

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue certifications in the Eco-Logical Business Program with the Pollution Prevention Outreach Team and Automotive and Landscape Advisory Groups. The goal for permit year 14 is to have three more auto shops certified and four more landscape services certified in the City of Portland.
- Update the Landscape Ecological Service BMP handbook to support the Eco-logical Business Program’s landscape services sector.
- Conduct trade journal and newspaper advertising for Portland and the state for the Eco-logical Business Program.
- Continue technical assistance to regulated businesses and general outreach to the public under the Columbia South Shore Well Field Wellhead Protection Program.
- Continue participation in the BEST Program.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

ILL-1: Identify, investigate, control, and/or eliminate illicit discharges (illicit connections, illegal dumping, and spills) to the municipal separate storm sewer system. Evaluate and, if appropriate, control non-stormwater discharges to the municipal separate storm sewer system

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

Illicit Discharges Elimination Program (IDEP)

- IDEP is conducted by the Spill Protection and Citizen Response Section within BES's Environmental Compliance Division (ECD). Accomplishments in FY 07-08 included:
 - Conducted 329 outfall inspections.
 - Continued revising the priority outfall list; currently track 125 outfalls.
 - Identified and eliminated three illicit discharges.
 - Continued dry-weather monitoring at all major outfalls during the summer sampling period; inspected/sampled all priority and Portland Harbor outfalls at least twice.
- The Industrial Stormwater Program continued to address illicit discharges and connections as they are identified during stormwater inspections and as referred. During FY 07/08, eight illicit discharges were identified; five discharges have been corrected, with three pending correction. The program continues to address wash water discharges and other non-stormwater discharges to the storm sewer system. Policies and appropriate control measures, if needed, are developed and implemented.

Spill Response

- Eight BES staff serve as duty officers for the BES Spill Response Hotline, which is staffed 24 hours a day. Staff are employees from Industrial Source Control, Field Operations, and Spill Protection & Citizen Response programs. Activities in FY 07-08 included:
 - The hotline received a total of 1,300 daytime calls (citywide) regarding pollution complaints, spills, sanitary sewer overflows, dye tests, and seepage discharges. All calls are responded to with at least a return telephone call; 80 to 90 percent receive a site visit.
 - The hotline received 485 after-hours complaint calls (citywide). The duty officer responded on-scene to 76 of these after-hours events; this included 44 after-hours events on weekends and 32 after-hours events on weekdays.

- The hotline received approximately 2,200 daytime additional information-only calls (citywide) and responded by providing agency referrals, industrial information, technical assistance, and regulatory information.
- The BES Spill Protection and Citizen Response section issued 31 warnings concerning possible violations of City Code 17.39.
- BES and the Water Bureau continue to implement Columbia South Shore Well Field (CSSW) Protection Area signage. The signs list the BES spill response hotline number and read: “TO REPORT SPILLS CALL (503) 823-7180.”
- The BES Spill Section continued a communication protocol with the Portland Fire Bureau that automatically pages the BES duty officer for a two-alarm event. Upon receiving the page, the duty officer contacts the Fire Bureau to identify if the duty officer is needed by the fire responders. Many events do not require the duty officer to respond to the site. In FY07-08, five two-alarm fire events resulted in pages to the duty officer.
- The BES Spill Section continued a communication protocol with the towing companies on the City of Portland towing contract. This notification ensures that BES will be contacted for auto fluid clean-up actions and for events that threaten to impact a stormwater facility (catch basin and downstream stormwater system). The duty officer may respond to events, depending on the reported information. Many events do not require the duty officer to respond. In FY 07-07, 61 calls were received from towing companies. No enforcement actions were taken.
- The BES Spill Section presented a Storm Watch video to 50 Bureau of Maintenance staff and managers to increase awareness and show how to prevent stormwater contamination.
- The Regional Spill Committee continued its coordination meetings, holding four quarterly meetings during permit year 13. The Regional Spill Committee meetings were enhanced by the addition of representatives of the Oregon Emergency Response System. Other long-standing attendees of the meetings are representatives from the Environmental Protection Agency Criminal Investigations (EPA CID), United States Coast Guard (USCG), Oregon Department of Environmental Quality (DEQ), Oregon State Police (OSP-DEQ), Oregon Department of Transportation (ODOT), Clean Water Services (CWS), Water Environment Services (WES), Port of Portland, Portland Fire Bureau (PFB), PFB Hazmat, City of Gresham, City of Milwaukie, City of Portland Water Bureau, and BES are invited to these meetings. BES chairs and attends all of the meetings.
- Continued activities related to the Spill Response Program, Accidental Spill Prevention Program, tank farm policy, Hazardous Materials Response Team, hazardous substances, and Buildings Plan Review Section.
- Conducted training for new duty officer staff on the BES spill response hotline and staff response duties.

- The BES Spill Section acquired signage that explains the use of green dye in surface water.. These signs will help reduce calls to the spill hotline triggered by dye testing.
- Developed typical training and enforcement scenarios for staff who implement the City's discharge enforcement program provisions.

Illegal Dumping

- Continued to implement solid waste and recycling programs (curbside recycling and yard debris collection, and neighborhood cleanup collection events) to help prevent illegal dumping.

Regional Programs

- Continued to coordinate with other regional programs (e.g., Metro, Multnomah County Animal Control, Multnomah County health inspections) to minimize pollutant discharges to the stormwater system.

Non-Stormwater Discharges

- Continued to implement measures to limit impacts from non-stormwater discharges related to City operations, per the Non-stormwater Discharge Evaluation report submitted in May 2006.

PERFORMANCE MEASURES

- **Results of non-stormwater discharge evaluations; related changes in policies or practices**
 - BES completed and submitted the non-stormwater discharge evaluation report as part of the IER submittal to DEQ in May 2006. That report closes out the City's targeted evaluation of the non-stormwater discharges listed in the MS4 permit. A number of new policy and procedure changes have been implemented in response to the evaluation findings.
- **Type of outreach and estimated number of people reached**
 - The BES Spill Response Hotline received and responded to:
 - 1,300 daytime calls
 - 485 after-hours complaint calls
 - 2,200 additional daytime information-only calls

Note: These numbers are citywide, not for just the MS4.
 - 50 staff members viewed the Storm Watch video.
 - New duty officer staff members were trained on BES spill response hotline and staff response duties.

➤ **Number of illicit connections discovered; number of illicit connections corrected; amount of materials collected/removed (where appropriate)**

- Eight illicit discharges were identified; five have been corrected and three are pending correction.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue to remove illicit discharges and connections to the storm sewer system as they are identified during IDEP, spill response, pretreatment, or stormwater permit inspections.
- Continue to conduct training to City staff on the BES spill response hotline and staff response duties. Continue duty officer training sessions.
- Continue Regional Spill Committee quarterly meetings.
- Continue to implement enforcement procedures for violations of City Code 17.34, 17.38, and 17.39.
- Continue research on outfall ownership/source identification in Portland Harbor.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

ND-1: Control erosion, sediment, and pollutant discharges from active construction sites.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

- There were 5,663 active private construction permits subject to erosion control inspection (citywide). (See Performance Measures, below, for more detail.)
- The Bureau of Development Services (BDS) conducted 13,042 erosion control-related inspections of private construction sites (citywide). This number includes only approved inspections. (See Performance Measures, below, for more detail.)
- There were 256 active public construction projects (citywide) with erosion control components. (See Performance Measures, below, for more detail.)
- Erosion control complaints (received through the erosion control hotline or staff referrals) were tracked through the City's building permit tracking program, TRACS. A total of 303 cases were responded to (citywide).
- The pre-permit-issuance site meeting program was continued, where the applicant's team meets onsite to discuss erosion control and other sensitive site issues. A total of six pre-issuance site visits were completed, with one of those requiring a second visit.
- Planning began for the 2009 Regional Erosion Prevention Awards, which recognize outstanding erosion control efforts by builders and contractors.
- The revised Erosion Control Manual was adopted as a Permanent Administrative Rule in March 2008.
- Began implementation of the joint public works permit process. This new joint process leads to enhanced coordination of construction phases and warranty periods, resulting in enhanced erosion control.

PERFORMANCE MEASURES

➤ Number and location (by watershed) of active public and private construction sites

Number of Active Private Construction Permits (Citywide) Subject to Erosion Control Inspection, by Watershed (as of 7/21/08)	
Location	Number of Permits
Columbia River	28
Columbia Slough	1,187
Fanno Creek	398
Johnson Creek	1,219
Kellogg Creek	3
McCarthy Creek	1
Multnomah Channel	6
Rock Creek (Washington County)	137
Spring Brook Creek	1
Tryon Creek	253
Willamette River	2,423
Unknown	137
Total	5,663

Number of Active Public Construction Projects with Erosion Control Components (Citywide), by Watershed	
Location	Number of Permits
Columbia Slough	14
Fanno Creek	6
Johnson Creek	26
Tryon Creek	8
Willamette River	52
Total	106
<i>Note: There were an additional 150 public construction projects for which no breakdown by watershed is available, for a total of 256 projects citywide.</i>	

➤ Number of inspections of active public and private construction sites, estimated by watershed

- In general, public sites are inspected daily during construction.
- Private inspections conducted during permit year 13 are summarized below. This number includes only approved inspections. Private sites are also subject to spot inspections.

Number of Approved Erosion Control Related Inspections – Private Sites (Citywide)	
Location	Number of Inspections
Columbia River	31
Columbia Slough	2,826
Ennis Creek	1
Fanno Creek	870
Johnson Creek	3,542
Miller Creek	4
Multnomah Channel	10
Rock Creek (Washington County)	256
Tryon Creek	487
Willamette River	5,014
No location specified	1
Totals	13,042
Notes:	
- The number of inspections reflects only those for permits approved by the City of Portland; inspections conducted by other jurisdictions (e.g. DEQ) are not included.	
- The number of inspections includes only inspections related to an approval signoff for the building permit, not interim inspections.	

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue to operate the erosion control hotline.
- Continue educating new employees about erosion control and pollution prevention.
- Continue to modify permitting, contracting, and inspection processes for more effective erosion control enforcement, especially for pollutant control measures.
- Conduct a seventh annual regional awards program to reward outstanding erosion control efforts by builders and contractors.
- Continue to evaluate the need for continuing education for contractors and City staff, and modify or develop curricula as needed.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

ND-2: Implement and refine stormwater management requirements for new development and redevelopment projects to minimize pollutant discharges and erosive stormwater flows.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

- Continued to track and implement the SAC's June 2002 report recommendations for new development and redevelopment and June 2004 report recommendations for transportation-related development.
- Continued implementation of the 2004 Stormwater Management Manual (SWMM). Permitted approximately 2,283 private building permits and 85 public works permits. Also responded to approximately 850 land use cases and early assistance requests, including technical assistance to City staff and the public.
- Completed the 2008 revision of the SWMM (to take effect October 2008). The revision incorporates the following elements:
 - Clarifies the application of the stormwater disposal hierarchy.
 - Includes a soil specification for the stormwater facility growing medium.
 - Includes typical details and specifications for vegetated facilities in the public right of way.
 - Updates the design specifications for all stormwater management facilities.
 - Is reorganized to improve usability.
 - Includes all new forms and submittal guides and a new Presumptive Approach Calculator (PAC) that will allow more flexibility in sizing vegetated facilities using infiltration testing results.

Note: Table C-1 of the MS4 permit requires the City to update its Stormwater Management Manual by December 2008. The work described here is part of that update.

In addition, a scope of work was developed to review the City's flow control and water quality standards for the 2011 SWMM revision.

- The Maintenance Inspection Program (MIP) ensures that operation and maintenance (O&M) plans are followed, provides technical assistance on operation and maintenance of stormwater management facilities, and assesses the effectiveness of flow control and sediment capture through field observations. The City's current database tracks a total of 4,696 properties and O&M plans, which encompass 7,738 private stormwater management facilities. Approximately 30.6 percent of the O&M plans are for industrial, commercial, multi-family, governmental, and educational properties, and 69.4 percent are single-family residential properties.

MIP activities in FY 07-08 included:

- 191 new O&M agreements were recorded and submitted that included plans to construct approximately 398 facilities.
- Inspected 283 properties, which included a total of 811 stormwater management facilities. The 811 facility inspections represent 10.5 percent of the total facilities (7738) in the MIP program. Facilities were inspected for operation and maintenance. Additionally, sites were assessed for pollution prevention BMPs (e.g., waste storage practices and wash activities).
- Made database changes to add fields and incorporate new standardized inspection form.
- Revised the inspection form to quantify deficiencies.
- Mapped MIP data, including MIP properties, facilities, and inspections.
- Made revisions to CH 3 (O&M) of the Stormwater Management Manual.
- Posted an MIP webpage.
- Improved coordination with BES plan review and BDS permit inspection groups.

(See breakdown of MIP information by watershed under Performance Measures, below.)

- In accordance with Stormwater Management Manual requirements, signed off on permits for a total of 875 source control measures at sites with high-risk characteristics or activities. (See Performance Measures for a breakdown by watershed.)

PERFORMANCE MEASURES

- **Location (by watershed), number, and type of stormwater management facilities constructed**

Total Number of Private Stormwater Facilities Planned for Construction¹ in FY 07-08 by Watershed		
Watershed	Number of Facilities	Number of Properties² (Served by Facilities)
Willamette River	224	92
Columbia Slough	47	21
Johnson Creek	60	32
Fanno Creek	36	26
Tryon Creek	15	12
Other	16	3
TOTALS	398	184
Notes:		
1. The installation date is unknown. For the purposes of this report, O&M recorded dates were used to determine facilities planned for construction in the 2007-2008 reporting year.		
2. Two properties lie in multiple watersheds and are double counted.		

**Total Private Stormwater Management Facilities Planned for Construction in FY 07-08
by Type and Watershed ¹**

Type of Facility	Watershed						
	Willamette River	Columbia Slough	Johnson Creek	Fanno Creek	Tryon Creek	Other	Total
Contained Planter Box	9						9
Flow Through Planter Box	63	11	11	14	4	2	105
Infiltration Planter Box	13	4	3				20
Vegetated Filter	1		1				2
Infiltration Trench			2				2
Soakage Trench		1				3	4
Oil/Water Separator	1		2				3
HazMat Control Structure							0
Porous Pavement	13	1	6	1	1		22
Stormwater Reuse System	1						1
Drywell	44	9	20		1		74
Ecoroof	13	2					15
Unknown							0
Tree	12						12
In-Line Detention Facilities	2	4		1			7
Sedimentation Manhole	7		4				11
Sand Filter	5		1	18	7		27
Manufactured Facility	13	4				6	23
Detention Pond - Wet			1				1
Detention Pond - Dry							0
Swale	26	7	6	2	1	4	46
Infiltration Basin	1	3	3		1		8
Constructed Treatment Wetland							0
Spill Control Manhole		1					1
Silt Basin						1	1
Total	224	47	60	36	15	16	394

1. See note 1 in previous table.

- **Location (by watershed) and number (and percentage of total constructed) of inspections, including overall compliance rate (number and percentage in compliance and number and percentage corrected), by type of stormwater management facility**

A total of 811 facility inspections were conducted, representing 10.5 percent of the total facilities (7,738) in the MIP program, as shown on the following two tables.

Inspections by Watershed		
Watershed	Number of Facilities Inspected	Number of Properties Inspected¹
Willamette River	376	138
Columbia Slough	279	85
Johnson Creek	54	18
Fanno Creek	52	31
Tryon Creek	45	19
Other	5	1
TOTALS	811	283
Notes:		
1. Nine properties lie in multiple watersheds and are double counted.		

Inspection Results by Facility Type				
Facility Type	Inspections	Maintenance Deficiencies	Installation Deficiencies	Deficiencies Resolved
Contained Planter Box	13			
Flow Through Planter Box	105	3		2
Infiltration Planter Box	11			
Vegetated Filter	1			
Infiltration Trench	2			
Soakage Trench	18			1
Oil/Water Separator	23			
HazMat Control Structure	0			
Porous Pavement	10			
Stormwater Reuse System	6		1	
Drywell	138	27	2	4
Ecoroof	9			
Unknown	1			
Tree	11	1	2	
In-Line Detention Facilities	17	1	2	1
Sedimentation Manhole	103	34	3	7
Sand Filter	14			
Manufactured Facility	126	14	1	1
Detention Pond - Wet	5			
Detention Pond - Dry	2			
Swale	144	17	2	3
Infiltration Basin	37	6	3	1
Spill Control Manhole	15	1	2	
Totals	811	104	18	20
Percent of total inspections	---	12.8%	2.2%	2.5%
*Deficiencies include facilities needing structural or vegetation improvements or facilities needing cleaning.				
**Installation deficiencies refer to facilities that do not meet the typical SWMM design specifications (i.e. insufficient grading, missing components, etc).				

Further, 45 O&M plans were found deficient in the 2007-2008 reporting year. O&M deficiencies consist of plans and maps that do not accurately reflect facilities built. Approximately 20, or 45 percent, of these inaccurate O&Ms were corrected via re-recording revised O&M plans.

➤ **Location (by watershed), number, and type of source control measures required by the Stormwater Management Manual**

Source Control Type	Watershed					Total
	Johnson Creek	Willamette	Tryon Creek	Fanno Creek	Columbia Slough	
Exterior Bulk Storage ¹	2	5	0	0	2	9
Fueling ¹	1	4	1	1	7	14
Liquid Storage ¹	1	12	0	0	5	18
Material Transfer Areas/ Loading Docks ¹	4	40	0	2	23	69
Parking - above and below grade ¹	0	21	0	0	0	21
Site Dewatering ¹	0	16	0	0	0	16
Trash ^{1,3}	45	389	1	10	166	611
Vehicle Washing ¹	1	9	0	1	7	18
Grease Management ²	14	76	0	1	39	130
07- 08 Totals	37	572	2	15	249	875

¹ Not all SWMM controls may have been met within the control type due to approved appeals from the requirements.

² Grease control totals include technical assistance

³ Tenant improvements may have their own control or share the main building's control; therefore, it is possible for one building to be counted more than once in the same control type.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Launch a comprehensive review of current flow control and water quality requirements and policies for the 2011 revision process.
- Continue to provide training and technical assistance on the SWMM to City staff and the development community.
- Continue to work with the SAC or similar advisory committee to develop and refine stormwater management policies and on revisions to the SWMM.
- Continue the Maintenance Inspection Program for private facilities, including:
 - Inspect approximately 400 MIP properties, including reinspection of deficient facilities.
 - Create GIS layers to display type of deficiency and refine reinspection/mailed procedures to increase percent deficiencies addressed.
 - Meet/train with BES plan review and BDS permit inspectors to improve accuracy of documentation and installation of stormwater facilities.
 - Coordinate educational outreach efforts with BES groups.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

STR-1: Structurally modify components of the storm drainage system to reduce pollutant discharges. Implement structural improvements on existing development to reduce pollutants in discharges from the municipal separate storm sewer system.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

- Continued to assess opportunities for water quality facilities in the City's watershed planning process. Identified various locations across watersheds where structural facilities are viable alternatives for watershed health.
- Continued work on the Stormwater System Plan, which will be a multi-year effort to fully define and plan for the stormwater system needs across Portland's watersheds.
- Continued to implement retrofits to the existing storm drainage system, as identified during routine operations and maintenance activities. Completed conversion of a total of 103 linear feet from ditches to swales (porous shoulder). (See Performance Measures, below, for more detail.)
- Continued design of stormwater facilities at NE 148th Avenue in the Columbia Slough Watershed, which will treat 294 acres of mixed land use (primarily residential).
- Completed construction of the NE 92nd Avenue water quality facility, which will treat stormwater from 53 acres of mixed-use drainage (commercial, industrial, and residential development and Columbia Blvd., a high-volume road).
- Completed construction of the Brownwood phase of the East Powell Butte Floodplain Restoration Project. The project features the following water-quality features: a realigned Johnson Creek that will slow flows; an additional 70-acre feet of flood storage to allow sediment to settle into the floodplain; extensive native vegetation to shade, store and filter creek and flood waters; and an interpretive area off the Springwater Corridor Trail.
- Began design of the first phase of the East Lents Floodplain Restoration Project, which will reduce nuisance flooding, while improving water quality.
- Coordinated with the Army Corps of Engineers to finalize the 60 percent design process for the Springwater Wetlands Restoration Project, which will include water quality elements as part of a habitat restoration project.
- Developed 60 percent design for the Errol Heights Wetland Restoration Project to increase wetlands habitat and remove culverts.
- Developed a design concept for the Errol Creek Confluence Project, which will add wetlands, remove culverts and improve fish access to the cool, consistent flow of Errol Creek.

- Completed NE 92nd Avenue water quality facility, which treats stormwater from 53 acres of mixed-use drainage (commercial, industrial, and residential development and Columbia Boulevard, a high-volume road).
- Completed design and permitting and began construction on the Hawthorne Hostel Stormwater Harvesting and Reuse Project, a demonstration project that will collect rainwater from the roof to re-use in the hostel's toilets and for landscape irrigation.
- Completed pre-design and began design of the Tabor to the River: Brooklyn Creek Basin Program, which will incorporate stormwater management solutions to eliminate high-risk basement flooding conditions under the 25-year design storm, replace or repair failing sewer infrastructure, improve surface and ground water hydrology, and reduce combined sewer volume and peak discharges from the basin.
- Continued pre-design of the Oaks Bottom habitat enhancement project that will improve the hydrologic connection between Oaks Bottom and the Willamette River. This multi-phased project will replace an existing culvert with a larger box culvert set at a lower elevation to improve year round water exchange with the Willamette River, increase off-channel salmon habitat, and enhance and restore 15 acres of wetland habitat through grading and revegetation.
- Completed design and permitting for the Stephens Creek stream restoration project at the confluence of Stephens Creek and the Willamette River, which will improve in-stream, riparian and floodplain wetland habitat for the benefit of native fish and wildlife species.
- Began Tryon Confluence Pre-design. The confluence project will include water quality elements as part of a habitat restoration project. In coordination with an ODOT culvert retrofit project, the City of Portland will construct channel improvements immediately downstream of the culvert outlet to improve low flow access to the culvert for upstream-migrating fish.
- Began Phase II of the Burlingame Sewer Repair Project. This project protects the sewer line, stabilizes the stream bed, and enhances stream complexity.
- Reached nearly 100 percent completion of the Tryon Headwaters project, which includes stream daylighting, wetland enhancement, street curb extensions, stormwater management, and replacement of culverts to facilitate fish movement. BES is partnering with a private developer, PDC, PDOT, and Portland Parks and Recreation and has received OWEB grant funding. Began the design stage of a stormwater treatment project on SW Marigold St., which will include stormwater conveyance and treatment in a system of sedimentation manhole(s) and swale, connecting to the newly daylighted stream .
- Continued pre-design for Fanno/Tryon water quality projects, focusing on stormwater and stream conveyance system modifications and retrofits to improve hydrologic and hydraulic conditions, stormwater management and operations, and system maintenance. The predesign project is now 100% complete. The first-priority recommended alternatives are now proposed for funding through the design and construction phases. Fourteen project request

forms have been submitted, most focusing on stormwater and water quality improvement as a major element/objective. A related green street project (the Marigold Curb Extension Project) is planned to be constructed in early fall of 2008.

- Conducted five series of ecoroof seminars. The purpose of the seminars was to give designers enough information to be able to build ecoroofs. Topics included structures, design, water proof membranes, plants, soil, irrigation, permitting, and maintenance. On average, 100 people attended each seminar. A second series is planned for fall 2008.
- Continued implementation of the Innovative Wet Weather Program (IWWP). IWWP uses a federal EPA grant to fully or partially fund sustainable stormwater projects throughout Portland. IWWP categories include water quality friendly streets and parking lots, downspout disconnection to bioswales and planters, and ecoroofs. Projects completed during FY 07/08 are listed below. (Additional information about these projects is included under Performance Measures, below.)
 - Water quality friendly streets and parking lots:
 - Cathedral Park Boat Ramp Parking Lot
 - Owens Corning Stormwater Project
 - SW Texas Green Street
 - Zenger Farm
 - Downspout disconnections/bioswales/planters:
 - Rejuvenation Hardware
 - Owens Corning Stormwater Project
 - Zenger Farm Stormwater Project
- Continued to provide oversight to ensure that commercial and industrial facilities comply with retrofit requirements under the Columbia South Shore Well Field Wellhead Protection Program. Conducted 250 inspections and follow-up inspections of businesses in the wellhead protection. Thirteen violations were identified, most related to containment, labeling, and reporting requirements.
- Portland Streetcar, PDOT, and Engineering Services completed a series of green street planters in South Waterfront development area along SW Moody. Nine planters manage approximately 34,000 square feet of street runoff that is filtered before entering the Willamette River.
- Portland Parks & Recreation and the Sustainable Stormwater Management Program completed construction of a green street facility at Holly Farms in southwest Portland. The water quality swale manages 7,100 square feet of street runoff with the potential for adding more runoff if the facility performs well.
- The Sustainable Stormwater Management Program and the Bureau of Maintenance completed construction of four stormwater filter boxes along SE Water Ave, filtering 7,100 square feet of street runoff before flowing into the Willamette River.

- Parks and the Sustainable Stormwater Management Program completed construction of the Cathedral Park parking lot planters. The five planters manage 100,000 square feet of parking lot runoff before it flows into the Willamette River..
- The Sustainable Stormwater Management Program fielded public requests for information and technical assistance and provided technical assistance to a variety of projects:
 - Received 55 requests for tours and speaking engagements. Conducted tours for professional planners, designers, developers, politicians, and staff from national jurisdictions.
 - Received over 25 requests for technical assistance.
 - Received over 40 requests for a green street.
 - Received more than 80 requests for assistance from non-profit groups, students, and other jurisdictions in the form of design review and information sharing.
 - Presented information at more than 20 local, regional, and national seminars and conferences.
 - Updated the home page for the Sustainable Stormwater Management Program website. The website received over 104,000 hits, a 22 percent increase over last fiscal year.
 - Developed public outreach fact sheets and tools, including a 30 x 6 foot roll-out Green Street, Green Street planting posters and fact sheets, and inspection guidance for builders, contractors, and inspectors of Green Streets.
- The Sustainable Stormwater Management Program completed an Ecoroof Plant Report and Cost Benefit Analysis to support the Ecoroof Program and assist designers, architects, and engineers in the selection, design, and implementation of ecoroofs.
- The City adopted the Grey to Green initiative, including a 5-year goal to implement over 43 acres of ecoroofs and more than 900 Green Streets citywide as a way to improve watershed health. In an effort to meet these goals, the Sustainable Stormwater Management Program:
 - Completed 60 percent design documents for more than 30 Green Streets in the Brooklyn basin (formerly Taggart D basin).
 - Continued plans to implement Green Streets along SE Clay St. while improving safety for bicyclists.
 - Implemented a "1% for Green" fund to invest in Green Street projects.
- BES and the Office of Sustainable Development (OSD) continued to provide technical assistance and grant funding through the Green Investment Fund (GIF) for projects that incorporate green building principles, including stormwater pollution prevention and management. Seven GIF grants were awarded to commercial and industrial projects featuring innovative stormwater management practices. Additional green building events and activities related to stormwater management included:
 - Sponsored the Build it Green! Tour of Homes, attended by about 1,200 people (plus those reached through media coverage). The tour demonstrated green building techniques, including ecoroofs, bioswales, pervious paving, rainwater harvesting and other sustainable stormwater management strategies in new development, redevelopment, and remodeling projects.

- Conducted the ReThink training series on green building. ReThink included five classes, with approximately 70 people attending each class. OSD also delivered 36 presentations to a variety of building-related organizations, including minority, women, and emerging small businesses (MWESB). Audience numbers ranged from 3 to 200 people per event, reaching a total of approximately 1,600 people.
- OSD continued to coordinate and offer Fix-It Fairs, a free neighborhood-oriented event that offers workshops and exhibits on home and garden topics, with a focus on health, and resource efficiency. Over 95 workshops and exhibits provide residents with self-help information and resources on everything from storm water manager, Naturescaping, and composting to water conservation, lead poisoning prevention and lowering energy bills. During permit year 13, 1,700 people attended three fairs.
- Conducted Clean River Rewards activities to provide information about stormwater management and eligibility for reductions in customers' monthly utility bills for managing stormwater onsite. Activities included:
 - Partnered with the Water Bureau Utility Customer Service and Low Income Assistance Program to provide customer service to ratepayers. Activities included specialized training for Utility Customer Service technicians upon hiring and to all staff upon request; inclusion of the general program brochure in each "move in" packet sent to new utility account ratepayers; and Utility Customer Service staff response to approximately 3,200 phone calls to the program hotline number.
 - Provided educational and outreach opportunities regarding stormwater retrofits and registration information, including:
 - 18 stormwater management workshops on retrofits of existing development for residential, commercial, industrial and multifamily properties, attended by 112 ratepayers
 - Attendance at 13 public events and speaking opportunities, making contact with approximately 3,548 people. Coordinated with other outreach programs to provide publications and messaging opportunities at an additional 10 events, reaching an additional 750 people.
 - Management of the Clean River Rewards website to provide information and technical assistance. The website registered approximately 67,000 external hits during the FY 07/08 fiscal year.
 - Provided stormwater retrofit and registration assistance to 376 technical assistance cases.
 - Verified stormwater discount registration at 234 active utility accounts, providing stormwater technical assistance on maintenance and stormwater facility improvements.

At the end of the fiscal year, a total of 35,031 utility ratepayers with active accounts have registered for stormwater discounts:

- 33,610 single-family residential ratepayers account for a total of 74,930,499 square feet of impervious area managed for stormwater.
- 1,421 multifamily, commercial, and industrial ratepayers account for a total of 29,731,626 square feet of impervious area managed for stormwater.

PERFORMANCE MEASURES

- **Location (watershed), number, and type of projects implemented**³
- **Type and amount of area managed by structural facilities**

Ditches to swales retrofits: See table below.

Ditches to Swales (Porous Shoulder) Retrofits		
Watershed	Location	Linear Feet
Tryon Creek	9140 SW 35 th Ave	20
Fanno Creek	5121 SW Camerson St	33
Johnson Creek	11336 SE Flavel St	50
Total		103

Innovative Wet Weather Program grant projects: See table below.

Innovative Wet Weather Program Grant Projects Completed in FY07/08				
PROJECT NAME	Stormwater Technology	Area Managed (sq. ft.)	Watershed	Date completed
Cathedral Park	Parking lot planters	110,000	East Willamette	3/21/2008
Owens Corning	Parking lot swales and down spout disconnect	17,600	Willamette	6/1/2008
Rejuvenation Hardware	Downspout disconnect	7,000	West Willamette	6/1/2008
SW Texas Green Street	Green Street	740,520	West Willamette	10/15/2007
Zenger Farm	Downspout disconnect and parking lot swales	15,170	Johnson Creek	7/1/2007

³ Performance measures for public involvement aspects of activities are under PI-1.

- NE 92nd Avenue water quality facility: Treats stormwater from 53 acres of mixed-use drainage.
- Brownwood phase of East Powell Butte Floodplain Restoration Project: Realigns Johnson Creek to slow flows; provides an additional 70-acre feet of flood storage to allow sediment to settle.
- South Waterfront development area along SW Moody: Nine planters filter approximately 34,000 square feet of street runoff before it enters the Willamette River.
- Holly Farms in southwest Portland: Water quality swale manages 7,100 square feet of street runoff.
- SE Water Avenue: Four stormwater filter boxes filter 7,100 square feet of street runoff before it flows into the Willamette River.
- Cathedral Park: Five parking lot planters manage 100,000 square feet of parking lot runoff before it flows into the Willamette River.
- Clean River Rewards registrations (citywide)
 - 33,610 single-family residential ratepayers; 74,930,499 square feet of impervious area managed for stormwater.
 - 1,421 multifamily, commercial, and industrial ratepayers; 29,731,626 square feet of impervious area managed for stormwater.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue ditch-to-swale conversions.
- Continue to coordinate implementation of projects funded by the Watershed Investment Fund, including an ecoroof on City hall, multi-block Green Street plan for the PSU area, and sustainable stormwater techniques for the PCC satellite campus in the Eastside industrial area.
- Continue the ecoroof seminar series.
- Develop and install a pollution reduction facility at Johnson Lake, a portion of which is publicly owned.
- Design and construct a Watershed Investment Fund project to treat stormwater on SW 19th Ave. (an unimproved road). The project was at 30 percent design as of 7/1/2008.
- Construct the Foley/Balmer stream enhancement and slope stabilization project in coordination with Portland Parks & Recreation. Done

- Complete the Fanno/Tryon Water Quality and TMDL Pre-design project and secure funding for first-phase recommendations. Done
- Construction of four green street projects in the Multnomah Village area which drains to the Fanno Creek watershed. (The Sustainable Stormwater Management Program, Fanno/Tryon Watershed, and 1% for Green Program)
- Construction of green street curb extensions on NW 35th in the NW Industrial Area to infiltrate and filter stormwater otherwise headed to the Willamette River. (The Sustainable Stormwater Management Program).
- Construction of green street facilities along SW Virginia will manage stormwater currently flowing directly to the Willamette River. (Sustainable Stormwater Management Program and the Community Benefit Opportunity Program)
- Construction of a green street facility at SW 4th & College will manage street runoff that currently flows directly to the Willamette River. (PDOT and the Sustainable Stormwater Management Program)
- Begin construction of the Errol Creek Confluence Project.
- Complete design of the East Lents Floodplain Restoration Project.
- Coordinate with the Army Corps of Engineers as they complete design of the Springwater Wetlands Restoration Project. (Awaiting federal funding for construction.)
- Complete the SE Clay Green Street Implementation Plan
- Continue to implement EPA grant-funded IWWP projects. IWWP projects in design and construction include:
 - Willamette Watershed:
 - Holmes Ecoroof Project
 - Legacy Parking Lot Retrofit
 - New IWWP projects are:
 - Identify, design, and implement a new “simple” green street project.
 - Identify an additional project in the Central Eastside or Northwest Industrial District.
- For the Sustainable Stormwater Management Program, continue to make informational presentations and provide technical and design assistance to developers and design/construction professionals; continue to conduct tours and distribute educational material; continue to monitor facilities for effective flow control and monitor soils for constituents of concern.
- Continue to provide oversight to ensure compliance with Columbia South Shore Well Field Wellhead Protection Program requirements. Create database to better track use of hazardous materials. Promote hazardous waste reduction and non-hazardous alternatives.

- Continue to implement Clean River Rewards activities.
- Identify future CIP and grant-funded retrofit projects through the watershed and sustainable stormwater programs.
- Continue to partner in the Green Investment Fund program. Continue to offer Fix-It Fairs and other environmental programs to the public through the Office of Sustainable Development.
- Complete construction of the Stephens Creek Confluence stream restoration project.
- Continue Oaks Bottom Phase I restoration pre-design.
- Complete Tryon Confluence Pre-design; achieve 90 percent design and permitting.
- Complete construction of the Hawthorne Hostel restoration project.
- Continue the Tabor to the River: Brooklyn Creek Basin Program.
- Complete Phase II of the Burlingame Sewer Repair Project. This project protects the sewer line, stabilizes the stream bed, and enhances stream complexity.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

NS-1: Protect and enhance natural areas and vegetation that help prevent pollutants from entering into the municipal separate storm sewer system.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

- **Natural Resources Inventory Update Project:** The City is updating its natural resources inventory for streams, wetlands, riparian areas, and wildlife habitat. This effort has included remapping streams, developing an improved vegetation data layer, and mapping/modeling natural resource features and functions within the City of Portland. The City's inventory relies and builds on the science and approach Metro used to produce the regional inventory of riparian corridors and wildlife habitat that formed the basis of the Title 13 Nature in Neighborhoods Program. To date, an overall inventory methodology has been produced for the city as a whole. The methodology has been refined somewhat to produce an area-specific inventory for the North Reach of the Willamette River. The products of this work will be used to support various City and community activities, such as updating the City's Willamette Greenway and environmental zoning programs; setting priorities for land acquisition, restoration, and public education activities; and advancing the City's compliance with regional, state, and federal regulations. The Bureau of Planning expects to seek endorsement in 2009 of the updated inventory methodology for use in long-range planning purposes and to inform future program updates.
- **The Citywide Tree Policy Review and Regulatory Improvement Project** completed the first year of a two-year schedule. The project staff are continuing to meet with community stakeholders to identify and discuss issues and solutions. Project staff will then develop and present several options for potential structural revisions to city codes, administrative rules, and processes to bureau directors, the Planning Commission, and City Council. The final product, which will include proposed changes to tree protection and tree removal regulations to better achieve watershed health and Urban Forestry canopy targets, is anticipated to be public review mid- to late spring 2009, with adoption by early to mid-summer 2009.
- **River Plan/ North Reach:** As part of the River Plan project, the City made progress toward developing a comprehensive, multi-objective plan for the land along the Willamette River in the North Reach (the area from the Broadway and Fremont Bridges north to the confluence with the Columbia River). Recommendations have been developed to achieve watershed health objectives for the North Reach. These or similar recommendations will be forwarded to the Planning Commission for consideration in the fall of 2008.
- **Regulatory Improvement** is an ongoing program to improve code and processes that affect development. In the past year, the City adopted code amendments to the third workplan (RICAP 3). This package included several changes to support watershed health and onsite stormwater management, including:
 - Clarified the exemption for stormwater outfalls in environmental zones to ensure only one outfall is allowed.

- Clarified the definition of waterbodies under environmental terms.
- Clarified how stormwater facilities can fit in with parking lot landscaping.
- Clarified the environmental violation and stormwater requirements for development in the Pleasant Valley plan district.
- Clarified the placement of parking spaces on sites with environmental zoning.

During FY 07-08, the Planning Commission approved the workplan for RICAP 4. RICAP 4 includes several items to improve the results of land divisions, including steps to limit driveways and other vehicle areas that contribute to stormwater.

- The Portland Watershed Management Plan (PWMP) identifies development of a Terrestrial Ecology Enhancement Strategy (TEES) as a priority action. Building upon activities conducted during FY 06-07, major activities in FY 07-08 included:
 - Holding workshops and other meetings with a technical advisory group.
 - Reviewing technical information developed with the advisory group.
 - Identifying anchor habitats, important connectors between anchor habitats, and significant gaps between habitat patches.
 - Recommending watershed-specific objectives for terrestrial ecosystems.
 - Identifying potential strategies and actions to address key management issues and special habitat types and wildlife species.
 - Providing general guidance to City bureaus for the restoration of terrestrial ecosystems.
- Under BES's Watershed Revegetation Program, many businesses and other private landowners participated in and helped fund revegetation projects on their properties and neighboring properties. The Watershed Revegetation Program initiated 463.8 acres of new projects to be planted in future years and is currently managing 1,574.5 project acres on both public and private property.

The following actions were taken under the Watershed Revegetation Program:

Willamette River

- Planted 17,168 plants on 10,846 linear feet of riverbank and 26.9 acres. This included 4,412 deciduous trees, 520 coniferous trees, and 12,236 shrubs.

Columbia Slough

- Planted 41,586 plants on 13,270 linear feet of streambank and 45.9 acres. This included 4,699 deciduous trees, 2,337 coniferous trees, and 34,600 shrubs.

Johnson Creek

- Planted 43,954 plants on 6,710 linear feet of streambank and 34.4 acres. This included 8,779 deciduous trees, 5,795 coniferous trees, and 29,380 shrubs.

Tryon Creek

- Planted 210 plants on 1,420 linear feet of streambank and 1.2 acres. This included 10 coniferous trees, and 200 shrubs.

Fanno Creek

- Planted 4,000 plants on 810 linear feet of streambank and 3.2 acres. This included 1,135 deciduous trees, 110 coniferous trees, and 2,755 shrubs.

Stormwater Management Facilities

- Planted 12,458 plants on 7.7 acres. This included 283 deciduous trees, 270 coniferous trees, and 11,905 shrubs.

Other

- Planted 3,690 plants on 3 acres. This included 975 deciduous trees, 50 coniferous trees, and 2,665 shrubs.

- Partnered with SOLV, project Team Up, to provide volunteer stream restoration projects (erosion reduction, invasive plant control, and native plantings) on private property at 13 sites in Portland. Volunteers and paid crew members planted approximately 2,800 trees, shrubs and cuttings, removed 2,130 pounds of trash, and removed approximately 80,000 pounds of invasive plants in the Willamette, Johnson Creek, Fanno Creek, Columbia Slough, and Tryon Creek watersheds.

Willamette River Watershed

- Planted 429 native plants; removed 800 pounds of invasive vegetation

Johnson Creek Watershed

- Planted 803 native plants; removed 8,200 pounds of invasive vegetation

Fanno Creek Watershed

- Planted 407 native plants; removed 10,210 pounds of invasive vegetation

Columbia Slough Watershed

- Planted 375 native plants; removed 2,080 pounds of invasive vegetation

Tryon Creek Watershed

- Planted 795 native plants; removed 59,200 pounds of invasive vegetation; removed litter; monitored and maintained vegetation

- Under BES's Community Stewardship Grants Program, awarded 13 stewardship grants totaling \$60,200 for projects that included planting native vegetation. (See PI-1 for project names.)

The grants program also awarded 20 mini-grants totaling \$7,800 in fiscal year 2007-2008. Mini-grants provided a variety of community groups and private property owners with native plant gift certificates to assist with riparian and upland restoration and revegetation projects in all Portland watersheds.

- BES and Portland Parks co-sponsored an Americorps member as a Stream Stewardship Coordinator (SSC) to engage citizens in project in Portland Parks natural areas. Thirty-one

events were held, where volunteers planted 2,533 trees, shrubs, and forbs along streams and removed vegetation in the Columbia Slough, Willamette, Fanno, Tryon, and Johnson Creek watersheds. The SSC also worked with Friends of Trees at 10 events, planting 735 native trees, shrubs and forbs.

- In the City Nature East Zone (natural resources), Portland Parks & Recreation conducted extensive weed removal and native plantings, with 7,500 volunteers contributing 29,000 hours. Areas covered included Johnson Creek Park, the Springwater Corridor trail, Bundy Park, Powell Butte, Big 4 Corners, Oaks Bottom Wildlife Refuge, Whitaker Ponds, Tideman Johnson Park, Mitchell Creek Natural Area, and the Tenino property.
- BES partnered with Portland Parks and Recreation to involve citizens in their local natural areas. Activities included invasive plant species removal, native plant installation, trail building, fencing sensitive aquatic resources, education for dog owners, and litter pickup.

Fanno Parks Project Summary	
Restoration	
# Restoration Events	41
# Plants	1,387
Length of fence built	~800 ft
Length of new trail built	~850 ft

Willamette Watershed Parks Projects	
Restoration	
# Restoration Events	27
# Plants planted	1,534
# Plants transplanted	~200
# Acres treated	~5.75

- Co-sponsored the Johnson Creek Watershed Council’s 10th annual Johnson Creek Watershed-Wide Restoration Event, where about 400 volunteers planted more than 6,000 native plants, removed 8 tons of invasive plants and hauled away 1 ton of trash from 14 sites.
- The Johnson Creek Willing Seller Program acquired approximately 1.29 acres of floodplain property.
- The Invasive Species Removal Program continued developing a strategy for the management of invasive species that includes public outreach and education, interbureau and interagency coordination, restoration, a control and restoration program, policy changes, assessment and monitoring, and identification of funding. In FY07-08, the program and its partners (Clean Water Services, Three Rivers Land Conservancy, and the Portland’s Bureau of Maintenance) treated over 100 acres of garlic mustard within City limits. (Other activities related to public involvement are reported under PI-1.)

- BES partnered with Parks staff and volunteers to remove invasive species and plant native species to restore habitat for fish and other wildlife in the Willamette Watershed. Work was done in Willamette Park, Willamette Moorage, Butterfly Park, Cathedral Park, and Oaks Crossing.
- Began the Southwest Subwatershed Improvement Strategies process for three subwatersheds (Marquam-Woods, Carolina-Terwilliger and California) to identify opportunities to protect and improve conditions in these areas.
- Implemented the East Side Willamette River Invasive Species Management project. This Watershed Investment Fund project enhanced and restored 90 acres in the Oaks Bottom and South Escarpment area.
- Partnered with Friends of Trees to support 19 volunteer street tree planting events throughout the region. The plantings included:

<u>Willamette River Watershed:</u>	377 trees
<u>Columbia Slough Watershed:</u>	732 trees
<u>Johnson Creek Watershed:</u>	113 trees
- The Bureau of Parks & Recreation developed the Urban Forest Action Plan to facilitate implementation of the 2004 Urban Forestry Management Plan. Prioritized actions are those that can be implemented by City of Portland bureaus, although achieving all of the plan's total goals will require participation from private organizations, individuals, and other public agencies. City Council accepted the action plan on March 14, 2007. An interbureau implementation group meets quarterly to facilitate implementation of the action plan, and a task force is developing standard performance measures for the urban forest. The Urban Forestry Commission reports annual accomplishments to City Council.
- City Nature Urban Forestry continued implementing the neighborhood Tree Liaison Program. With a new curriculum and name, the Neighborhood Tree Steward Program is focusing on urban forestry education, Portland tree ordinances, and tree care and planting. Over 312 volunteers have been trained in the last 12 years. In permit year 13, tree liaisons contributed over 3,800 hours of their time to promote proper tree care throughout the city. Some of the many successful projects include neighborhood pruning workshops, bicycle pruning workshops, school ground cleanups, school arboretum plantings, and tree care presentations to neighborhood associations. Tree liaisons have been responsible for planting over 40 native evergreen and 40 large mature trees on school grounds, staffing tree care booth at 17 community events, and distributing 400 vine maples and 100 Oregon white oaks.
- City Nature Urban Forestry partnered with Portland Public Schools to provide hands-on planting and urban forestry curriculum for kindergarten to 12th grade students. During the 2007-2008 school year, 84 trees were planted on school grounds, 75 high school students volunteered 200 hours, and 700 elementary students participated in planting trees at Jefferson, Humboldt, West Sylvan, Whitman, and Rigler elementary schools.

- City Nature Urban Forestry collected data describing the urban forest, with an emphasis on the structure and function of the City’s street and park tree resources and the value of the ecosystem services and aesthetic benefits they provide. Findings were published in October 2007. Portland’s street and park trees save the city over \$11 million in stormwater processing by intercepting nearly half a billion gallons of stormwater annually. Citywide, the urban forest canopy intercepts 1.3 billion gallons of stormwater each year, saving almost \$36 million in processing costs.
- City Nature Urban Forestry Worked with the Roseway and Eastmoreland neighborhoods to prune and care for trees in the Reed College Place median and Roseway 72nd median; 150 city trees were pruned for low branches.
- City Nature Urban Forestry conducted youth tree liaison programs with high school and middle school science classes. The students learned about urban forestry issues and created neighborhood street tree inventories around their schools. The schools involved were Mt. Scott Learning Center and Rigler Elementary School
- City Nature Urban Forestry continued to lead a multibureau effort to review and revise the City’s recommended street tree lists to include more native trees. Recommendations provided by a public/private/nonprofit stakeholder group were incorporated, and staff is producing the revised lists.
- City Nature Urban Forestry distributed 500 native tree seedlings, including 100 Oregon white oaks, to low-income neighborhoods through community events.
- Measure 37 was passed by the voters of Oregon in November of 2004. The measure allowed Oregonians to file claims seeking compensation if a public entity enacted or enforced a land use regulation that restricted the use of private property and had the effect of reducing the fair market value of the property. Measure 37 has been superseded by Measure 49, which took effect on December 6, 2007. As of June 30, 2008, one Measure 49 claim has been submitted. The staff report recommended approving the claim, which would allow a change in zoning from multi-family to commercial development.
- The PP&R vegetation survey designated 97 acres of natural area parks as “healthy” and 2,469 acres as “good.” The majority of these acres are in Forest Park. Some other sites with “good” habitat include Clatsop Butte Natural Area, Maricara Park, Powell Butte Natural Area, Gentemann Property and Columbia Slough Natural Area. In FY 2007-2008, the “Protect the Best” program removed holly, blackberry, ivy and other non-natives on a total of 850 acres, or 33 percent of the total “healthy” and “good” habitat within Portland parks.

PERFORMANCE MEASURES

➤ **Number of trees and shrubs planted and location (by watershed).⁴**

Number of Trees and Shrubs Planted by Watershed FY07/08				
	Trees	Shrubs	Not specified	TOTALS
Willamette River	5,309	12,236	1,963	19,508
Columbia Slough	7,768	34,600	375	42,743
Johnson Creek	14,687	29,380	6,803	50,870
Fanno Creek/Tryon Creek	1,255	2,955	2,589	6,799
Location not Specified			18,022	18,022
TOTALS	29,019	79,171	29,753	137,942

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Develop a work plan to guide how the City’s existing natural resource inventories and environmental zoning program will be updated for areas throughout the city and to address the City’s obligations for compliance with Metro Title 13.
- Seek City Council endorsement in 2009 of the updated natural resource inventory methodology for use in long-range planning purposes and to inform future program updates.
- Identify structural changes to city codes, administrative rules, and processes to streamline and consolidate tree regulations, reduce complexity, and better meet Urban Forestry canopy targets and other objectives, watershed health goals, and other city policies concerning trees; begin the public review process to adopt the changes.
- Review and propose updates to city policies and codes to improve control of invasive plant species through development and redevelopment; update the Portland Plant List to identify key invasive species, and research options for establishing a local, region, or state noxious weed law.
- Adopt revisions to the existing Greenway Program for the North Reach of the Willamette River and begin work on the program update for the Central and South reaches.
- Seek City Council approval of the RICAP 4 package, including the land division items, by January 2009, with implementation in January or February 2009. Begin work on RICAP 5, which may include measures to explore incentives for green building procedures and

⁴ Performance measures for public involvement aspects of activities are under PI-1.

potentially remove regulatory barriers to inventive stormwater tools such as ecoroofs and rainwater cisterns.

- Continue work on the Terrestrial Ecology Enhancement Strategy, including:
 - Identification of focal species and habitats to be monitored.
 - Technical guidance to City bureaus to address “Special Status” habitats and species, and key wildlife management concerns, and for restoring terrestrial ecosystems.
 - Implementation of selected recommended actions.
- Continue to work with riparian and floodplain property owners within the Johnson Creek Watershed.
- Continue to purchase land for stormwater management and natural resource protection, and work with property owners to protect existing natural areas.
- Implement the East Side Willamette River Invasive Species Management project. This Watershed Investment Fund project enhances and restores 100 acres in the Oaks Bottom and South Escarpment area.
- Invasive Species Removal Program: Continue the development of a strategy for the management of invasive species.
- Continue watershed program plantings and purchases.
- Work with neighborhood tree volunteers to plant native evergreen trees at school grounds near freeways.
- Continue the multibureau effort to review and revise the City’s recommended street tree lists to include more native trees.
- Continue to inventory street trees, using volunteer, online, and community efforts.
- Continue to implement the Urban Forestry Action Plan, including development of performance measures for the urban forest.
- Continue the “Protect the Best” program within the Parks department to remove invasive plant species in ecologically healthy and good park sites.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

PM-1: Conduct program management, coordination, and reporting activities.
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KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

- Coordinated with numerous other City bureaus and jurisdictions to continue implementation of the Stormwater Management Plan (as reported under the individual BMPs).
- Met regularly (generally monthly) with co-permittees to coordinate permit activities.
- Coordinated with other jurisdictions statewide through the Oregon Association of Clean Water Agencies (ACWA); participated on water quality, stormwater, and groundwater committees.
- Completed the permit renewal application and submitted it to DEQ September 2, 2008.

PERFORMANCE MEASURES

Not applicable.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue to work with co-permittees, City bureaus, and other jurisdictions and organizations to implement BMPs.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

MON-1: Conduct environmental monitoring to assess the chemical, biological, and physical effects of stormwater discharges on receiving surface waters.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13 (FY 07-08)

- Reviewed and revised the stormwater monitoring program to identify and focus on the monitoring elements that will best support second-term permit conditions.
- Implemented the six tasks of the stormwater monitoring program (as defined in the Stormwater Management Plan).
- Prepared the annual Monitoring Compliance Report. (The monitoring report follows BMP MON-2, below.)
- Conducted water quantity studies (infiltration, volume reduction, peak flow reduction) at infiltration facilities throughout the city.
- Conducted water quality monitoring (facility effluent) at infiltration facilities throughout the City, including ecoroofs and flow-through planters/swales.
- Conducted soil and sediment monitoring at infiltration facilities throughout the City.
- Continued development of BMP-specific summaries, including statistical analyses of monitoring results from demonstration projects.
- Conducted comprehensive statistical temporal trend analyses of multi-year ambient and discharge monitoring data.
- Finished ditch-to-swale conversion monitoring and prepared statistical analysis.

Note: Tables B-1 and B-2 of the MS4 permit summarize required monitoring types, locations, and analytical parameters. The required monitoring information is included under Tasks 4 and 5 of the Monitoring Compliance Report.

PERFORMANCE MEASURES

Not applicable.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue to implement the stormwater monitoring program.
- Continue development of BMP-specific summaries of monitoring results from demonstration projects.
- Update trend analyses of ambient water quality data where sufficient data have become available.
- Update statistical analysis of previously collected Portland MS4 monitoring data to evaluate trends.
- Review all ambient monitoring currently conducted to streamline monitoring and explore expansion of biological monitoring, such as macroinvertebrates.
- Continue to work with co-permittees, ACWA members, and other jurisdictions to coordinate and share stormwater monitoring data and, where possible, establish joint monitoring efforts. Specifically, work with the ACWA stormwater committee to identify types of BMPs (structural and non-structural) that should be monitored. Identify TMDL and 303(d) parameters that have not been analyzed in the past in BMP effectiveness studies.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

MON-2: Conduct program monitoring to evaluate the effectiveness of implementing the best management practices (BMPs) in the Stormwater Management Plan.
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KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 13(FY 07-08)

- Continued to report on performance measures for each BMP. This Annual Compliance Report is the third year that the performance measures have been reported on.
- As part of the permit renewal application submitted in September 2008, assessed progress toward meeting pollutant load reductions (benchmarks) set in the May 2006 SWMP for Rock Creek, Fanno Creek, and the Columbia Slough and developed new (2013) benchmarks for these watersheds.
- Developed 2013 benchmarks for stormwater TMDL waste load allocations (WLAs) approved by EPA in September 2006. EPA approved TMDL WLAs for Johnson Creek and the Willamette River and its tributaries.

PERFORMANCE MEASURES

This BMP does not in itself have any performance measures. The performance measures for other BMPs are reported under each individual BMP.

PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 14 (FY 08-09)

- Continue to track and report on performance measures for each BMP.
- Continue to use the adaptive management process to assess the effectiveness of existing BMPs and assess new opportunities/options for improving stormwater management.

PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its entire Stormwater Management Plan. Proposed changes to each BMP are included in that submittal. The current SWMP will remain in effect until the Oregon Department of Environmental Quality issues a revised permit and the revised SWMP becomes effective.

MONITORING COMPLIANCE REPORT (BMP MON-1)

Note: Tables B-1 and B-2 of the MS4 permit summarize required monitoring types, locations, and analytical parameters. The required monitoring information is included under Tasks 4 and 5 of this Monitoring Compliance Report.

INTRODUCTION

The purpose of this monitoring report is to comply with Schedule B of Portland's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit. The report summarizes stormwater quality monitoring activities conducted by the City of Portland and its co-permittees (hereinafter referred to as Portland) during permit year 13 (fiscal year 2007-08) and briefly discusses the results. The complete set of monitoring data is available on CD-ROM upon request.

BACKGROUND

Portland developed a stormwater quality monitoring program as part of its original NPDES permit application in 1991 and began to implement the program that year, before receiving the permit. That initial monitoring program focused on characterizing pollutant concentrations in urban runoff from various land uses.

In 1997, the Oregon Association of Clean Water Agencies (ACWA), a consortium of cities and agencies, prepared a report called *Analysis of Oregon Urban Runoff Water Quality Monitoring Data Collected from 1991 to 1996*, which was a compilation and statistical analysis of available land use-based stormwater monitoring data for the state. The findings of that report indicate that stormwater quality for different land uses is reasonably well characterized by the existing data set and that additional monitoring is not likely to significantly improve current knowledge in that area.

Based on these findings, and in an effort to answer new questions and increase the cost-effectiveness of monitoring efforts, ACWA petitioned DEQ to allow modifications to permit-required monitoring programs. In 1996, Portland developed and proposed to DEQ a revised monitoring program that built upon previous monitoring efforts. The revised program de-emphasized land use-based monitoring and directed resources toward BMP effectiveness monitoring in order to acquire new information and improve stormwater management activities. Portland began to implement the revised monitoring program in permit year two, and DEQ approved the revised program in April 1998.

DEQ issued a permit renewal to Portland in 2004, with a revised permit reissued in July 2005. Portland reviewed and revised its stormwater monitoring program to identify and focus on the monitoring elements that will best support the second-term permit conditions. The minimum

monitoring requirements can be found in Tables B-1 and B-2 of the permit and Tables MON-1, MON-2, and MON-3 of Portland's 2006 Stormwater Management Plan (SWMP).

PROGRAM COMPONENTS

The purpose of the monitoring program is to assess the chemical, biological, and physical effects of stormwater discharges on receiving surface waters. The program comprises the following six tasks:

- 1:** Program Planning/Annual Report/ Review of Existing Water Quality Data
- 2:** BMP-Specific Monitoring (related to BMPs IND-1, ILL-1, OM-1, and ND-1)
- 3:** Stormwater Management Facility Monitoring
- 4:** Comprehensive Ambient Monitoring to Assess Stormwater Impacts
- 5:** Stormwater Monitoring at Land Use Stations or MS4 Outfalls
- 6:** Collaboration with Oregon DEQ, ACWA, and other jurisdictions

The following sections list the respective tasks and their objectives and summarize the monitoring activities of the past year and previous years in a table for each task.

TASK 1: PROGRAM PLANNING/ANNUAL REPORT/REVIEW OF EXISTING WATER QUALITY DATA

Objectives

Task 1 has several objectives. The first objective is to compile and interpret stormwater data collected as part of watershed and other monitoring efforts. The second objective is to prepare reports to evaluate data results with respect to stormwater management. The third objective is to review the monitoring program annually and prepare the annual monitoring compliance report.

Accomplishments

To address the first objective described above, Tasks 2 to 5 of this report summarize the monitoring activities Portland completed during FY 07/08. To address the second objective, monitoring-related technical reports, summary reports, or statistical analyses are developed to evaluate how effective various BMPs are in reducing pollutants in stormwater discharges. Development of these documents depends on the availability of sufficient data to allow for a rigorous statistical analysis. Preparation of this annual monitoring compliance report addresses the third objective.

Results

To date, some of the monitoring of some stormwater management facilities (SMFs) has been sufficient to prepare separate monitoring reports with or without a thorough statistical evaluation of the data. Monitoring of other SMFs or MS4 outfalls has not been compiled in reports, even though preliminary statistical analyses have been conducted. The ambient monitoring data for all major streams were reviewed and analyzed in FY07-08. An update of the 2000 and 2001 water quality trending reports was prepared and submitted to DEQ as part of the MS4 permit renewal submittal in September 2008. The City will consider all of these analyses and reports when updating or changing the monitoring program in any future SWMP revisions.

TASK 2: BMP-SPECIFIC MONITORING

INDUSTRIAL STORMWATER PROGRAM MONITORING

Objective

The objective of the Industrial Stormwater Program monitoring is to evaluate the long-term water quality trends, which will highlight the overall effectiveness of the Industrial Stormwater Program.

Accomplishments

The City has used monitoring for over 10 years to evaluate the impact of the City's education, technical assistance, and permitting efforts for the Industrial Stormwater Management Program (described in IND-1). Program monitoring started in 1991, with monitoring of two outfalls (one in the Northwest industrial area and one on Swan Island) that drained basins with predominantly commercial and industrial land uses. Early monitoring demonstrated that there were significant amounts of pollutants discharging from these sites. In 1996, the City reduced its monitoring

efforts because of successful implementation of the Industrial Stormwater Management Program in these basins.

The current sampling program started in 1999 with the collection of flow-composite water quality samples at Outfall (OF) 19 in the northwest industrial core area. Typically, three storm events are sampled annually and analyzed for common pollutants and seven metals. (The minimum list of analytes is shown in Table MON-3 of the Stormwater Management Plan.) Starting in permit year 11 (FY 2005-2006), semi-volatile organic compounds and PCBs were added to the analyte list.

The Portland Harbor Program initiated an outfall monitoring program in 2007 that continued through 2008. Although all of the samples were analyzed, the data have not been released and therefore are not available for discussion in this report.

Results

Three storm events, which occurred in November 2007 and March 2008, were sampled, as shown on the following table.

OF 19 – Data Summary

Date	72-h Antecedent Rainfall (inches)	24-h Antecedent Rainfall (inches)	6-h Antecedent Rainfall (inches)	Total Event Rainfall (inches)	Sample Collection Time Rainfall (inches)
11/26/2007	0.00	0.00	0.00	0.32	0.32
3/7/2008 – 3/8/2008	0.02	0.02	0.02	0.44	0.44
3/25/2008 – 3/26/2008	0.32	0.00	0.00	0.43	0.42

Most metal concentrations were below the long-term mean and median concentrations for this outfall, even though the total suspended solids concentrations and storm event rainfall were around the long-term average. A trend analysis of all the data collected to date (discussed in Task 5) confirms the observation of decreasing pollutant concentrations. Despite these improvements, total recoverable copper, lead, and zinc concentrations are still above the respective chronic criteria.

This year, a new analytical method that lowered the method reporting limit (MRL) by one order of magnitude was used for the analyses of PAHs. As expected, the number of detects increased substantially, but all detects were below the previous MRL.

ILLICIT DISCHARGES MONITORING

Objective

The objective of the Illicit Discharge Elimination Program (IDEP) is to identify illicit discharges to the MS4 system, investigate citizen complaints, and evaluate the potential impact of permitted non-stormwater discharges to the MS4 system.

Accomplishments

The City's Illicit Discharge Elimination Program (described in ILL-1) has been conducting the following monitoring activities since 1995 to identify and eliminate illicit discharges.

- **Dry-Weather Monitoring.** The City monitors the City's major outfalls (128) every summer to locate illicit discharges such as cross-connections, washing, or illegal dumping operations. Monitoring consists of field observations and testing with meters, kits, and grab samples. During the 3-month dry summer period each year, all of the major outfalls are monitored at least once, and the priority outfalls are monitored up to three times per month. Historically, approximately four hits have been detected each month, ranging from illicit discharges (e.g., equipment cleaning, cooling water, commercial fleet vehicle washing) to allowed non-stormwater discharges (e.g., residential car washing, landscape irrigation).
- **Spill Response.** Approximately 1,785 complaint calls were made to the City's spill hotline during this permit year. Staff members conduct visual observation and some monitoring to identify and track reported spills or other illicit discharges. The vast majority of identified materials are sediment, washwater, or discharges related to dye tests.
- **Non-Stormwater Monitoring:** The City began non-stormwater sampling activities in 1994. The City's approach was to identify sampling locations or surrogate sampling locations for each type of non-stormwater discharge and analyze the samples across a suite of common pollutants found in stormwater runoff. The results were compared to instream and/or groundwater water quality standards to identify potential concerns and determine if the discharges had the potential to negatively impact beneficial uses found in waters of the state. If discharges were identified as problematic, the City evaluated whether improvement actions were practicable. In some cases, City policies or procedures were changed to limit discharges, route certain discharges to the sanitary sewer, or otherwise help mitigate their impacts.

A non-stormwater discharges evaluation report was submitted to DEQ as part of the City's Interim Evaluation Report (IER) in May 2006. The report evaluated the 19 non-stormwater discharge categories identified in the City's 1995 permit. The five categories added in the 2004 permit have a limited presence within the City's jurisdiction, and the City has limited scope in regulating or participating in these state-regulated activities. For that reason, those categories were assessed on a policy basis only and were not fully evaluated with sampling. The City has implemented new policies that address two of these categories (draining/flushing of water storage reservoirs and discharges from environmental clean up sites). The other three (discharges from start up flushing of groundwater wells, aquifer storage and recovery wells, and potable groundwater monitoring wells) have no or limited applicability in the Portland permit area and are regulated by state agencies.

Results

The majority of the dry weather discharges are from groundwater infiltrating into stormwater pipes and are not of concern. This permit year, the number of discharges of potential concern was small; all of them were related to unauthorized discharges of some type of process water and were easily corrected.

Illicit Discharge Monitoring – Summary of Activities

Sampling Date	Sampling Locations	Follow-up Investigations
July 2007	128 – Total 78 – Columbia Slough; 41 – Willamette River; 19 – Johnson Creek	29 had discharges; 1 follow-up upstream investigation. OF 53A (Willamette River at N Ramsey Ave): Discharge had a slight rancid odor and was tracked upstream to Bay Valley Foods (BVF) @ 10001 N Rivergate Blvd. BVF found a spilt/ruptured bladder that was set to seal a catch basin in the process area. The bladder was replaced on the afternoon of August 26, 2007.
August 2007	70 – Total 32 – Columbia Slough; 37 – Willamette River; 1 – Johnson Creek	21 had discharges; 2 follow-up upstream investigations. OF 60 (Columbia Slough at N Columbia Blvd & Delaware): Small amount of discharge was tracked upstream to Peninsular Precision Sheetmetal located at 9208 N Peninsular Ave. The discharge consisted of non-contact cooling water, which the company was asked to redirect to the sanitary sewer. OF 45 (Willamette River at N River & Essex): Flow tested positive temperature and chlorine and was tracked upstream to NW Copper Works @ 1303 N River St. This information was forwarded to the Industrial stormwater compliance section for follow-up.
September 2007	70 – Total 32 – Columbia Slough; 37 – Willamette River; 1 – Johnson Creek	25 had discharges; 0 follow-up upstream investigations.

OPERATIONS AND MAINTENANCE MONITORING

Objectives

Evaluate the effectiveness of maintenance practices, identify the need for improvements, propose better designs for facilities and activities, and monitor the effectiveness of these improved designs.

Accomplishments

Throughout the first permit period, the City used monitoring to help evaluate the effectiveness or need for enhancement of maintenance practices (described in BMP OM-1 in the Stormwater Management Plan). The City has sampled the effectiveness of old and new facility designs

(sedimentation manhole and infiltration shoulder swale designs) and conducted some monitoring of discharges from City facilities (the Albina Maintenance Yard) and City activities (street sweeping). Data from these monitoring activities have helped prioritize the types of source control measures to implement and provided guidance on the value or undesirable impacts of some system designs.

O&M monitoring in the second permit term has included the continuation of a sediment quality study started in 2001, a sediment accumulation study started in FY 2004-05, and monitoring of two test ditch-to-swale conversions to evaluate the effects of maintenance activities. In FY 2007-08, the ditch-to-swale conversion test study concluded; the results of a simple statistical analysis are provided below.

Results

The sediment accumulation study attempted to quantify the rate of sediment accumulation at various stormwater management facilities (SMFs), which was intended to help with preparing accurate maintenance and cleaning schedules for these facilities. Three ponds and one swale were included in this study. A variety of difficulties were encountered, including vandalism of the monitoring equipment, high standing water in the ponds, channel erosion, yard debris dumping, and excessive vegetation growth that acted as a sediment barrier. While the actual sediment accumulation rates are questionable for all but one facility, the collected grain size and sediment quality data are useful and will be analyzed in the near future.

The sediment quality study was concluded in June 2007, and all available analytical results were included in the final analysis. The grain size analyses continue to show clear differences among the facility types. As expected, the facility with the longest stormwater residence time contains the finest sediment and typically has the highest concentrations of metals and pesticides. This final result of this study is presented under Task 3.

Six storm events have been monitored at the test ditch-to-swale conversions. The last two events were simulated storms that used tap water instead of stormwater. While the influent and effluent concentrations are not comparable to actual storm event samples, the focus of the study was on the relative difference between the two swales and not the absolute concentrations. While both swales significantly increased the hardness ($p < 0.05$), total dissolved solids (TDS), and total and dissolved phosphorus concentrations, they also reduced the total suspended solids (TSS), total metal, and some dissolved metal concentrations. Overall, the swale with a layer of sand topped with compost seems to perform better than the all-compost swale by removing more TSS and total metals and increasing the phosphorus and TDS concentrations to a lesser extent. However, only the dissolved zinc concentrations is significantly lower ($p < 0.05$) in the sand/compost swale as compared to the all-compost swale. Since these types of ditch to swale conversion will potentially be used in watersheds that have a phosphorus TMDL, additional studies may focus on how to eliminate the increased phosphorus concentrations.

Summary of Stormwater Management Facility Monitoring

BMP Sampled	Number of Sampling Locations	Permit Year (PY) 1-12 Number of Events Monitored	PY 13 Number of Events Monitored	PY 13 Sampling Dates	PY 13 Type of Samples Collected
Ditch-to-Swale Conversion	3	4 storm events	2 simulated storm events	6/4/2008 6/18/2008	Flow-composite stormwater

EROSION CONTROL MONITORING

Objectives

The City's erosion control strategy (described in BMP ND-1 in the Stormwater Management Plan) includes erosion and sediment control monitoring. The monitoring objective is to evaluate the effectiveness of the City's erosion control code.

Accomplishments

In the first permit cycle, the City monitored three separate developments, from approximately the time that public utilities were installed all the way through housing construction. Two of the sites were in southeast Portland (an apartment complex and a large subdivision), and the third site (another subdivision) was in northwest Portland. Each site was monitored across four storm events in 1997. In general, the monitoring showed that a large amount of sediment was being released from construction sites. The northwest site released more than three times the amount of TSS in one storm event than the reference site sampling station located in northwest Portland released in one year.

Extensive monitoring of a subdivision under construction in southeast Portland was conducted from April 2000 to April 2003. Collected water quality data indicate that 1) the runoff concentrations of all major pollutants decreased over time, and 2) the erosion control measures in place were very effective in reducing the pollutant load in the runoff.

In March 2000, the City implemented a new City Code and Erosion Control Manual to help reduce the amount of pollution being released from construction sites. The City subsequently began sampling at a new southeast subdivision site to try to determine the effect of the new regulations on pollution reduction. That site proved to have significant construction and related issues that resulted in delays and made sampling impossible.

Because of the substantial variety in erosion control measures that can potentially be applied on a given site, results from one site are most likely not transferable to another site. The City has therefore decided that erosion control monitoring will not be continued for the time being.

Results

None

TASK 3: STORMWATER MANAGEMENT FACILITY (SMF) MONITORING

STORMWATER QUALITY AND SEDIMENT MONITORING

Objective

The objective of Task 3 is to conduct monitoring to evaluate the effectiveness of existing and new stormwater management facilities (SMFs) to reduce pollutants in discharges and better manage stormwater.

Accomplishments

In the past, little information on the effectiveness of structural stormwater management facilities was available. In 1995, the City began to monitor various types of structural BMPs that were installed as public and private facilities within the City boundaries (as reported in the annual compliance reports). Since then, many types of structural BMPs have been well characterized by various other jurisdictions and organizations nationwide. The City will continue to work with ACWA and other Phase I communities to identify and fill data gaps for mostly newer types of structural BMPs (such as planter boxes and curb extensions) for which little or no effectiveness information is available. For example, the City is currently monitoring the effectiveness of stormwater curb extensions and street planters for retention and detention of various sizes of storm events, as well as collecting data from stormwater flow-through planters for various storm events. Results are discussed below.

Results—Sediment Quality

Even though the last sampling event at three stormwater management facilities (SMFs) in the Columbia Slough Watershed occurred in FY 2006-07, statistical analyses are presented in this annual report. In addition, results from an erosion control wet pond in the Johnson Creek watershed are included in the analyses.

A non-parametric correlation analysis (Spearman's rho) was used to evaluate the correlation between grain size and sediment pollutant concentrations. To represent the grain size distribution, the grain size where 50 percent of the sediment passes through the sieve (D50) was selected by interpolation. This is in essence the median grain size of the sediment capture by the facility.

From the D50 values, it is clearly evident that the shorter the residence time in the facility, the coarser the sediment retained by the facility. Thus, the hydrodynamic device and vault with a stormwater residence time in the order of minutes retain only the coarser sediment fraction (median to fine sand), whereas the forebay, wetpond, and wetland are able to capture finer sediment (silt fraction) because of a stormwater residence time in the range of hours or perhaps even days.

DDT and dieldrin show a significant ($p < 0.05$) inverse relationship to D50; i.e., the finer the sediment, the higher the concentration of these two legacy pollutants. The result for heavy metals is mixed; i.e., while there is a general indication that finer sediment may have higher concentrations, the result is confounded by substantial differences in metals concentrations in sediment from different sources. The most compelling evidence is that the sediment from the

erosion control wetpond has the lowest concentrations despite the fineness of the sediment because there were very few current anthropogenic sources of heavy metals present. The heavy metal sediment concentrations are more reflective of natural soil levels.

Summary of Stormwater Management Facility Sediment

Facility	D50 ¹ Median [µm]	DDT Median [µg/kg]	Dieldrin Median [µg/kg]	Zinc Median [mg/kg]	Chromium Median [mg/kg]	Lead Median [mg/kg]
Hydrodynamic Device	350	4.1	0.4	225	74	39
Vault	60	19.3	7.3	396	198	85
Wetland	11	22.5	9.1	452	158	105
Forebay	34	36.4	8.3	960	47	74
Wetpond	19	---	---	106	41	14

¹ D50 is the grain size at which 50 percent of the sediment passes through the sieve.

STORMWATER QUANTITY AND SOIL MONITORING

The following table summarizes all low-impact development (LID) facilities that have been monitored to date. Facilities that were monitored during this permit year are discussed below.

Summary - Facilities Monitored through June 2008

Facility	Facility Type	Age (years)	Monitoring Type				
			Infiltration Testing	Flow Testing	Flow Monitoring	Soil Sampling	WQ Monitoring
Hamilton Apartments	Ecoroof	9			✓		✓
Portland Building		2			✓		✓
Multnomah County Bldg.		5			✓		
NE Siskiyou Green Street	Curb Extension	5	✓	✓	✓	✓	
SE Ankeny Green Street		4	✓	✓			
People's Co-Op (SE 21 st & Tibbetts)		2					
NE Fremont/131st		3	✓	✓			
SW 12 th Green Street	Street Planter	3	✓	✓		✓	
New Seasons		4				✓	
Glencoe Rain Garden	Vegetated Infiltration Basins and Swales	5	✓	✓	✓	✓	
Glencoe Parking Lot Swale		6				✓	
OMSI Parking Lot		16	✓			✓	
ONRC		6	✓				

St. Andrews Parking Lot		5	✓				
SW Community Center		13				✓	
Walnut Park Police Precinct		14				✓	
George Middle School	Flow-through Planters/ Swale	3			✓		
Oregon Zoo Parking Lot		2		✓			✓
BES Water Pollution Ctrl Lab		4			✓		
ReBuilding Center		3		✓			✓
SE Alder & 41 st	Flow Restrictors	4		✓	✓		

Results—Water Quality Monitoring

Ecoroofs

Ecoroofs are vegetated facilities that replace a standard roof, mostly on buildings with a low roof pitch. They consist of soil media and vegetation atop a waterproof membrane. They are designed to reduce peak flows and total runoff volume.

Ecoroof Effluent Water Quality - Summary

Parameter	Units	Portland Building	Hamilton West Roof	Hamilton East Roof
		Mean of 4 samples	Mean of 15 samples	Mean of 15 samples
Dissolved Copper	µg/L	21.2	11.5	7.8
Dissolved Lead	µg/L	1.18	0.11	1.29
Dissolved Zinc	µg/L	26.7	14.3	49.8
Total Dissolved Solids	mg/L	228	123	86
Nitrate-N	mg/L	1.15	0.25	0.34
Total Phosphorus	mg/L	1.01	0.53	0.29
Ortho Phosphate	mg/L	0.89	0.43	0.22

The Portland ecoroof outlet and two (west and east) outlets on each side of the Hamilton ecoroof were sampled for three storm events during permit year 13.

The ecoroof on the Portland Building was installed in 2006, and effluent has been sampled four times since June 2007. As expected for disturbed soil, nitrate-nitrogen and total and dissolved phosphorus concentrations are high, with the phosphorus concentrations similar to those on the Hamilton ecoroof right after installation. Dissolved copper concentrations appear to have declined but are still well above the levels observed on the Hamilton roof. Furthermore, it is

currently unclear what the source of the fairly high total dissolved solids and hardness concentrations are.

All dissolved metals as well as phosphorus from the Hamilton west roof were at the lower end or below the range previously observed. On the other, total and dissolved lead and zinc in the June 2008 sample from the east roof were extremely high and well above any value previously seen. It is unclear what source could cause such a spike, and it is extremely unlikely that the ecoroof material itself is responsible for this.

Phosphorus levels are still higher in the effluent from the west roof. This is expected because the west-side soil had a much higher nutrient content by weight at the time of installation and has much more vegetative cover that can decay and release nutrients.

Flow-Through Planters/Swales

Flow-through planters/swales have a bottom and an underdrain system that allow them to be used in poorly draining soils or adjacent to structure foundations. They provide peak flow reduction and water quality treatment, but volume retention is reduced because the underdrain passes some of the infiltrated volume into sewers or open channels.

Oregon Zoo Parking Swales Water Quality Summary

Analyte	Units	Row 5 Inlet	Row 4 Outlet	Row 7 Outlet
		Mean of 4 samples		
Dissolved Copper	µg/L	4.05	5.76	4.94
Dissolved Lead	µg/L	0.43	0.23	0.13
Dissolved Zinc	µg/L	15.7	7.9	2.3
Total Dissolved Solids	mg/L	20	60	181
Total Suspended Solids	mg/L	8	8	2
Total Phosphorus	mg/L	0.08	0.12	0.36

Both flow-through swales provide little treatment for dissolved copper, but fairly good treatment for dissolved lead and zinc and total suspended solids. Phosphorus concentrations in both swales are somewhat elevated, probably because of the disturbed soil material in the swales. It is unclear why the total dissolved solids concentration in Row 7 is so much higher than in Row 4, but could a result of slight differences in the soil mix used.

Results—Soil Quality Monitoring

Soil samples from ecoroofs, green streets, and swales were collected in 2008. For some facilities, this was the second sampling event. Typically, soil sampling events are about three years apart, since changes in the composition of the soils are expected to be very small. Once three sampling events have been conducted, an initial data comparison will be conducted to evaluate if there is any substantial change that could potentially be attributed to the accumulation of stormwater pollutants.

TASK 4: COMPREHENSIVE AMBIENT MONITORING

Objective

The objective of Task 4 is to conduct comprehensive in-stream stormwater monitoring to evaluate stormwater impacts associated with the chemical, biological, and physical characteristics of receiving waters.

Accomplishments

The City has conducted a comprehensive ambient monitoring program since the early- to mid-1990s. The data collected have been used to help DEQ establish TMDLs in the Columbia Slough, Johnson Creek, Willamette River, Fanno Creek, and Tryon Creek. These sites are monitored under both dry-weather and wet-weather conditions. The City is committed to continuing this program and may modify it from time to time to better answer new questions as they arise. At a minimum, the locations and frequencies summarized in Table MON-1 of the SWMP will be maintained. The minimum analytical parameters for ambient monitoring are shown in Table MON-3 of the SWMP and Table B-2 of the permit.

In addition, the City is committed to building upon a macroinvertebrate monitoring program that began about two years ago and includes monitoring by high school students. Results of that expanding monitoring program will be discussed in the next annual report.

Comprehensive Ambient Sampling – Summary

Surface Water Body	No. of Locations ¹	Monitoring Frequency ¹	Water Body-Specific Analytes ²
Balch Creek ³	4	monthly - quarterly	As, Ni, BOD-5, ammonia, ortho-P
Columbia Slough ⁴	9	weekly to bi-monthly	Ni, Hg, Chlorophyll a, ammonia, ortho-P, TKN
Fanno Creek	8	weekly to quarterly	Chromium, ortho-P
Johnson Creek ⁴	8	monthly	Heavy metals, ammonia, ortho-P, herbicides
Tryon Creek	3	monthly	Ammonia, ortho-P, oil & grease
Willamette River	4 transects; 3 locations per transect for field parameters; 1 composite for all others	monthly to quarterly	Heavy metals (Ar, Cd, Cr, Fe, Hg, Mo, Ni, Se)

¹ Number of sampling locations and monitoring frequency are greater than indicated in Table MON-1 of the SWMP, but are not necessarily reflective of future efforts.

² Analytes common to all surface water bodies are shown in Table MON-3 of the SWMP and Table B-2 of the permit.

³ Balch Creek is not a required ambient monitoring location, as shown in Table MON-1 of the SWMP and Table B-1 of the permit.

⁴ Some sampling locations are outside the City of Portland.

Results of Comprehensive Ambient Monitoring during PY 13

Attainment of Selected Important Water Quality Standards/Criteria

Surface Water Body	Attainment of Water Quality Standards or Guidance Values ¹				
	Bacteria ²		Dissolved Copper ³	TSS ⁴	Total Phosphorus ⁵
	406 MPN/100 mL	126 MPN/100 mL	5 µg/L		
Columbia Slough	51/54	9/9	54/54	45/54	49/54
Fanno Creek	78/142	0/8	12/13		30/59
Johnson Creek	52/98	0/8	98/98	91/98	
Tryon Creek	22/36	0/3	11/12		
Willamette River	142/144	4/4	48/48		

¹ Number of samples that attain standard/number of samples collected.

² 406 MPN/100mL is the single sample standard; 126 MPN/100mL is the 30-day geometric mean of ≥ 5 samples. (For this summary, the geomean of weekly or monthly data collected throughout the year was calculated.)

³ Compared to NMFS guidance value for salmonids of 5 µg/L.

⁴ Compared to guidance value: Columbia Slough – 25 mg/L; Johnson Creek – 20 mg/L.

⁵ Spring to fall average compared to Columbia Slough TMDL of 0.155 mg/L; spring to fall median compared to Fanno Creek TMDL of 0.13 mg/L.

Most streams meet most of the criteria or guidance values most of the time. The greatest concern is the bacteria concentrations in the tributaries, with the single sample standard met between 50 and about 60 percent of the time. The mainstem Willamette River and the Columbia Slough meet the single sample bacteria standard most of the time and the geometric mean standard all the time, despite the fact that the CSO control in the Willamette River has not been implemented.

All streams almost always meet the dissolved copper guidance provided by NMFS and thought to be protective of salmonid species. Only one value in Fanno Creek and one value in Tryon Creek were above the guidance value.

The Columbia Slough meets its phosphorus TMDL concentrations at most locations most of the time. Fanno Creek and its tributaries, on the other hand, met the phosphorus TMDL concentration only about 50 percent of the time.

Johnson Creek and the Columbia Slough meet their respective TSS guidance values, established to meet the toxics TMDLs, most of the time.

Results of Comprehensive Ambient Monitoring Trend Analysis⁵

Results of the trend analyses are discussed on the following pages and summarized in Tables 1 through 5 for the following five major streams:

⁵ These results were also included in the permit renewal submittal that was submitted to DEQ on September 2, 2008.

- Willamette River
- Columbia Slough
- Johnson Creek
- Fanno Creek
- Tryon Creek

The tables include identified water quality trends by stream for wet seasons (November through April) and dry seasons (May through October), as well as annually. Although wet season data are most likely associated with stormwater discharges from the MS4, dry season data may also help assess overall program effectiveness (e.g., for pollution prevention BMPs such as illicit discharge control and public involvement). It is important to note that there are other sources of stormwater not associated with the Portland MS4 that may contribute to the observed trends.

Trend analyses are a powerful tool for detecting changes of water quality over time (temporal trends). However, the following considerations must be taken in account when interpreting the results:

- An increasing or decreasing trend does not automatically mean there is a concern—i.e., the trend is not necessarily related to anthropogenic activities and is not an indication of whether a water quality standard is met.
- An increasing trend may indicate a positive change (e.g. DO, water clarity [Secchi disk depth]).
- Monotonic trend analyses do not capture changes in trends during the time period over which the trend analysis was conducted. For example, a declining trend over one part and an increasing trend over another part of the analyzed time period may result in no overall trend. In addition, an overall increasing trend may not reveal that the more recent samples collected actually show a declining trend.
- An ACWA subcommittee of monitoring and statistical experts (the MS4 Trend Analysis Subcommittee, or MTAS) recommended at least 30 data points collected over at least 5 years for a basic trend analysis and over 10 years' worth of data for a trend analysis with a seasonal component. Significant trends observed over shorter time periods or fewer data points may not reflect a true long-term trend.
- Constituents such as conductivity, pH, total solids, and hardness were not considered in the trend evaluation. They either do not have water quality standards or, in the case of pH, the water quality standard is expressed as a range, and an increasing or decreasing trend by itself may not be very meaningful.

Willamette River

For most analytes and all but one location, 120 monthly data points over 10 years (1998-2008) were available for analysis (Table 1). Nutrient data (ammonia, nitrate, and phosphorus) were only available from a 2-year period (2002-2002; 25 data points) and therefore do not meet the minimum requirements set by the MTAS for trend analyses.

All significant temporal trends are consistent with improving water quality. Specifically:

- Total and dissolved copper and TSS show an improving trend for the dry season at all three locations analyzed;
- Total and dissolved Pb and Zn show an improving trend for the dry and wet season and the full year.
- Dissolved oxygen shows improving trends mainly at the most downstream location (South Kelly Point Park) during the wet season and the full year.

Overall, the water quality trends are very positive during the wet and dry season and may be related to the multiple efforts taking place in the Willamette Watershed, including the reduction of stormwater discharges through combined sewer overflows. Trends observed for the dry season (total and dissolved copper and TSS) but not for the wet season may be the result of the increased variability of wet season storm events.

Table 1. WILLAMETTE RIVER

		WATER QUALITY TREND BY LOCATION/SEASON									
		Upstream ==> Downstream									
		Location	F			B			D		
		Season	Dry	Wet	Year	Dry	Wet	Year	Dry	Wet	Year
Analyte	Date Range ¹	N									
Total Suspended Solids (TSS)	5/13/98 - 4/3/08	120	↓	---	---	↓	---	---	↓	---	---
Total Copper (Cu,T)	5/13/98 - 4/3/08	120	↓	---	↓	↓	---	↓	↓	---	---
Dissolved Copper (Cu,d)	5/13/98 - 4/3/08	120	↓	---	↓	↓	---	---	↓	---	---
Total Lead (Pb,T)	5/13/98 - 4/3/08	120	↓	↓	↓	↓	↓	↓	↓	↓	↓
Dissolved Lead (Pb,d)	5/13/98 - 4/3/08	120	↓	↓	↓	↓	↓	↓	↓	↓	↓
Total Zinc (Zn,T)	5/13/98 - 4/3/08	120	↓	↓	↓	↓	↓	↓	↓	↓	↓
Dissolved Zinc (Zn,d)	5/13/98 - 4/3/08	120	↓	↓	↓	↓	↓	↓	↓	↓	↓
Total Dissolved Solids (TDS)	5/13/98 - 4/3/08	120	---	---	---	---	---	---	---	---	---
E. coli	5/13/98 - 4/3/08	120	---	---	---	---	---	↑	↓	---	---
Total Phosphorus	8/9/00 - 8/21/02	25	↓	↓	↓	---	---	---	---	↓	---
Nitrate-Nitrogen (NO ₃ -N)	8/9/00 - 8/21/02	25	↑	---	---	---	---	---	---	↓	---
Ammonia-Nitrogen (NH ₃ -N)	8/9/00 - 8/21/02	25	↑	---	↑	---	---	---	---	---	---
DO*	5/13/98 - 4/3/08	120	---	↑	↑	---	↑	↑	---	↑	↑
Temperature	5/13/98 - 4/3/08	120	---	---	---	---	---	---	---	---	---
Secchi Disk Depth *	5/13/98 - 4/3/08	120	↑	---	---	↑	---	---	---	---	---

Notes:

N = Number of data points in trend analysis

¹ South Kelly Point Park (Site D): no data available between 1/13/1999 and 7/12/2000

Dry season (May-October)

Wet season (November-April)

* Upward trend indicates improvement

--- No significant trend observed.

↑ Significant increasing trend (p < 0.05)

↓ Significant decreasing trend (p < 0.05)

↑ Somewhat significant increasing trends (0.05 ≤ p < 0.1)

↓ Somewhat significant decreasing trends (0.05 ≤ p < 0.1)

25 Number of data points does not meet minimum requirement set by the MS4 Trend Analysis Subcommittee (MTAS)

Location Key

F = Waverly Country Club (RM 17.9)

B = Morrison Bridge (RM 12.7)

D= South Kelly Point Park (RM 1.1)

Note: Blue shading indicates an improving trend.

Columbia Slough

A robust set of water quality data is available for 14 constituents, ranging from field measurements and conventional parameter to nutrients and metals. Anywhere from over 5 years (64 data points) to over 10 years (128 data points) of data are available for trend analyses (Table 2). A sampling location at the downstream end of each main Slough segment [upper (158), middle (21B), and lower slough (SJB)] was selected for analyses.

During the wet season, all significant trends, with the exception of chlorophyll a at location 21B, indicate improving water quality at all three locations.

- The most consistent improvements throughout the Slough are observed for total lead and nitrate. Total phosphorus and dissolved lead show improvements at two of the three sampling locations. Decreasing nitrate and phosphorus concentrations are possibly related to completion of the Mid-County sanitary sewer project in the mid 1990s. That project resulted in removal of cesspools and septic systems and the associated sewage contamination of groundwater in areas upgradient from the Slough.
- It is unclear why chlorophyll a is increasing throughout the Slough, while total or ortho-phosphorus concentrations are decreasing.
- Cleanup efforts at many industries are probably responsible for the declining lead levels in all three Slough segments.
- Decreasing E.coli levels in the Lower Slough (SJB) during the wet season are most likely related to the efforts to virtually eliminate combined sewer overflows.
- Dissolved oxygen also shows improving trends in all three Slough segments, and water clarity (as indicated by the Secchi disk depth) has markedly increased in the Upper Slough (158).

Overall, the water quality in the Columbia Slough shows significant improvement trends resulting from a combination of removal of cesspools and septic system sources in upgradient groundwater, cleanup efforts at legacy industries, and virtual elimination of combined sewer overflows. The increase in chlorophyll a throughout the Slough is of potential concern for aesthetic reasons.

Table 2. COLUMBIA SLOUGH

		WATER QUALITY TREND BY LOCATION/SEASON									
		Upstream ==> Downstream									
		Location	158			21B			SJB		
Analyte	Date Range	Season	Dry	Wet	Year	Dry	Wet	Year	Dry	Wet	Year
Total Suspended Solids (TSS)	10/7/96 - 3/11/08	128	---	↓	↓	↑	---	---	---	---	---
Total Lead (Pb,T)	4/7/98 - 3/11/08	115	↓	↓	↓	---	↓	↓	↓	↓	↓
Dissolved Lead (Pb,d)	4/7/98 - 3/11/08	115	---	↓	↓	---	↓	↓	---	---	---
E. coli	10/7/96 - 3/11/08	126	↑	---	---	---	---	---	---	↓	---
Chlorophyll a	3/2/98 - 3/11/08	124	---	↑	↑	↑	↑	↑	↑	---	↑
BOD	10/7/96 - 3/11/08	127	---	---	---	↑	---	---	↑	---	↑
Total Phosphorus	10/7/96 - 3/11/08	128	---	↓	↓	↑	---	---	---	↓	---
Ortho-Phosphorus	10/7/96 - 3/11/08	128	---	---	---	---	---	↓	↓	---	↓
Total Kjeldahl Nitrogen (TKN)	10/7/96 - 3/11/08	128	---	---	---	↑	---	↑	↑	---	---
Nitrate-Nitrogen (NO ₃ -N)	10/7/96 - 3/11/08	128	---	↓	↓	---	↓	↓	↓	↓	↓
Ammonia-Nitrogen (NH ₃ -N)	10/7/96 - 3/11/08	128	↑	---	---	↓	↓	↓	↓	↓	↓
DO*	11/19/01 - 3/11/08	72	---	↑	---	---	↑	↑	↑	↑	↑
Temperature	11/19/01 - 3/11/08	73	---	---	---	---	---	---	---	---	---
Secchi Disk Depth*	8/13/02 - 3/11/08	64	↑	---	↑	---	---	---	---	---	---

Notes:

N = Number of data points in trend analysis

Dry season (May-October)

Wet season (November-April)

* Upward trend indicates improvement

--- No significant trend observed.

Location Key

158 = NE 158th Ave Bridge

21B = NE 21st Ave Bridge

SJB = St. John's Landfill Bridge

- ↑ Significant increasing trend (p < 0.05)
- ↓ Significant decreasing trend (p < 0.05)
- ↑ Somewhat significant increasing trends (0.05 ≤ p < 0.1)
- ↓ Somewhat significant decreasing trends (0.05 ≤ p < 0.1)

25 Number of data points does not meet minimum requirement set by the MS4 Trend Analysis Subcommittee (MTAS)

Note: Blue shading indicates an improving trend.

Johnson Creek

On average, a little over 5 years (67 data points) of continuous data are available for trend analyses (Table 3). Three monitoring locations were selected for the analysis: one close to the upstream end of Johnson Creek within the City of Portland (JC-6), one close to the downstream end (JC-2), and one approximately in the middle (JC-4).

- During the wet season, ortho-phosphorus shows a significantly decreasing trend at all three locations investigated.
- Dissolved lead and dissolved oxygen show improvements at JC-4 during the wet season.

While encouraging, these trends are insufficient to draw any conclusions as to their cause. The sparseness of significant trends may be because of the relatively small data set, which does not meet the minimum requirements proposed by the MTAS. However, it should be noted that no significantly increasing trends for any constituents of concern were observed.

Overall, the water quality trends show improvement in Johnson Creek, especially during the stormwater-dominated wet season.

Table 3. JOHNSON CREEK

		WATER QUALITY TREND BY LOCATION/SEASON									
		Upstream ==> Downstream									
		Location	JC-6			JC-4			JC-2		
		Season	Dry	Wet	Year	Dry	Wet	Year	Dry	Wet	Year
Analyte	Date Range	N									
Total Suspended Solids (TSS)	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
Total Chromium (Cr,T)	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
Total Copper (Cu,T)	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
Dissolved Copper (Cu,d)	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
Total Lead (Pb,T)	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
Dissolved Lead (Pb,d)	7/1/02 - 3/18/08	67	---	---	---	---	↓	---	---	---	---
Total Zinc (Zn,T)	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
Dissolved Zinc (Zn,d)	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
Turbidity	10/13/03 - 3/18/08	53	---	---	---	---	---	---	---	---	---
E. coli	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
Ortho-Phosphorus	7/1/02 - 3/18/08	67	---	↓	↓	---	↓	↓	---	↓	↓
Nitrate-Nitrogen (NO ₃ -N)	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---
DO*	7/1/02 - 3/18/08	67	↑	---	↑	---	↑	↑	---	---	---
Temperature	7/1/02 - 3/18/08	67	---	---	---	---	---	---	---	---	---

Notes:

N = Number of data points in trend analysis

Dry season (May-October)

Wet season (November-April)

* Upward trend indicates improvement

--- No significant trend observed.

↑ Significant increasing trend (p < 0.05)

↓ Significant decreasing trend (p < 0.05)

↑ Somewhat significant increasing trends (0.05 ≤ p < 0.1)

↓ Somewhat significant decreasing trends (0.05 ≤ p < 0.1)

25 Number of data points does not meet minimum requirement set by the MS4 Trend Analysis Subcommittee (MTAS)

Location Key

JC-6 = SE 158th Ave Bridge

JC-4 = SE 92nd Ave Bridge

JC-2 = SE Umatilla St Bridge

Note: Blue shading indicates an improving trend.

Fanno Creek

Between 10 years (117 data points) and 15 years (173 data points) of monthly data are available for trend analyses (Table 4). In addition to data from the most upstream (FC-9) and most downstream (FC-6) sampling locations, data from a location about halfway between were analyzed. Data collection for Cu, Pb, and Zn restarted in 2006; therefore, insufficient data are available to conduct a trend analysis.

- At the upstream location (FC-9), few trends are significant, and none of the significant trends occur during the wet season. The significant trends indicate decreasing *E. coli* concentrations and temperature, both of which could be the result of improved riparian conditions.
- FC-6, the most downstream location, shows decreasing trends during the wet season, the most significant of which is for *E. coli*. Again, this could potentially reflect improvements made within the riparian area. It is unclear why dissolved phosphorus and ammonia exhibit an increasing trend during the dry season.
- Location FC-8 shows the greatest number of significant trends. All significant trends during the wet season, including TSS and total phosphorus, are decreasing. These trends may be the result of instream bank stabilization projects that reduced the bank erosion. The dry season data exhibit increasing trends for total and dissolved phosphorus and ammonia.

Overall, the significant water quality trends that are observed during the wet season are indicative of improving water quality. A combination of riparian improvements and instream bank stabilization may be responsible for these improvements.

Table 4. FANNO CREEK

		WATER QUALITY TREND BY LOCATION/SEASON									
		Upstream ==> Downstream									
		Location	FC-9			FC-8			FC-6		
Analyte	Date Range	Season	Dry	Wet	Year	Dry	Wet	Year	Dry	Wet	Year
		N									
Total Suspended Solids (TSS)	7/23/93 - 3/19/08	173	---	---	---	---	↓	↓	---	↓	---
E. coli	1/16/96 - 3/19/08	145	↓	---	↓	---	---	---	---	---	---
Total Phosphorus	7/23/93 - 3/19/08	173	---	---	---	↑	↓	↓	---	↓	↓
Ortho-Phosphorus	5/19/98 - 3/19/08	117	↑	---	---	↑	---	---	↑	---	---
Ammonia-Nitrogen (NH ₃ -N)	7/16/96 - 3/19/08	138	---	---	---	↑	↑	↑	↑	---	---
DO*	2/18/95 - 3/19/08	155	---	---	---	↓	---	---	↓	---	---
Temperature	7/23/93 - 3/19/08	173	---	↓	↓	---	---	↓	---	---	---

Notes:

N = Number of data points in trend analysis

Dry season (May-October)

Wet season (November-April)

* Upward trend indicates improvement

--- No significant trend observed.

↑ Significant increasing trend (p < 0.05)

↓ Significant decreasing trend (p < 0.05)

↑ Somewhat significant increasing trends (0.05 ≤ p < 0.1)

↓ Somewhat significant decreasing trends (0.05 ≤ p < 0.1)

25 Number of data points does not meet minimum requirement set by the MS4 Trend Analysis Subcommittee (MTAS)

Location Key

FC-9 = 3975 SW Beaverton-Hillsdale Hwy

FC-8 = 4916 SW 56th Ave.

FC-6 = 6900 SW Beaverton-Hillsdale Hwy

Note: Blue shading indicates an improving trend.

Tryon Creek

Data collection for TSS, field parameters, and nutrients started in 1997, for a total of over 120 data points (Table 5). Data collection for metals started in 2005, and only 32 data points (fewer than recommended by the MTAS) were available for trend analyses.

Few significantly increasing temporal trends were found. Most of them occur during the dry season and therefore are most likely not associated with MS4 stormwater.

Table 5. TRYON CREEK

Analyte	Date Range	N	WATER QUALITY TREND BY LOCATION/SEASON			
			Location	4		
			Season	Dry	Wet	Year
Total Suspended Solids (TSS)	8/19/97 - 4/1/08	129	↑	---	---	
Total Chromium (Cr,T)	9/6/05 - 4/1/08	32	---	---	---	
Total Copper (Cu,T)	9/6/05 - 4/1/08	32	---	---	---	
Dissolved Copper (Cu,d)	9/6/05 - 4/1/08	32	---	---	---	
Total Nickel (Ni,T)	9/6/05 - 4/1/08	32	---	---	---	
Total Lead (Pb,T)	9/6/05 - 4/1/08	32	---	---	---	
Total Zinc (Zn,T)	9/6/05 - 4/1/08	32	---	---	---	
Dissolved Zinc (Zn,d)	9/6/05 - 4/1/08	32	---	---	---	
E. coli	8/19/97 - 4/1/08	129	---	---	---	
Total Phosphorus	8/19/97 - 4/1/08	129	---	---	---	
Ortho Phosphorus	8/19/97 - 4/1/08	128	↑	---	---	
Nitrate-Nitrogen (NO ₃ -N)	8/19/97 - 4/1/08	129	↑	---	↑	
DO*	8/19/97 - 4/1/08	129	---	---	---	
Temperature	8/19/97 - 4/1/08	129	---	↓	---	

Notes:

N = Number of data points in trend analysis

Location Key

Dry season (May-October)

4 = 10750 SW Boones Ferry Rd

Wet season (November-April)

* Upward trend indicates improvement

--- No significant trend observed.

↑

Significant increasing trend (p < 0.05)

↓

Significant decreasing trend (p < 0.05)

↑

Somewhat significant increasing trends (0.05 ≤ p < 0.1)

↓

Somewhat significant decreasing trends (0.05 ≤ p < 0.1)

25

Number of data points does not meet minimum requirement set by the MS4 Trend Analysis Subcommittee (MTAS)

Note: Blue shading indicates an improving trend.

TASK 5: STORMWATER MONITORING AT LAND USE STATIONS OR MS4 OUTFALLS*

Objective

Monitoring at land use stations and outfalls allows the City to evaluate the physical, chemical, and biological characteristics of stormwater and its potential impact on ambient water quality.

Accomplishments

The City monitors public outfalls that drain mixed land uses but include a substantial portion of industrial/commercial land uses. Even though previous monitoring has indicated that stormwater quality is influenced mainly by land use and not by watershed (ACWA 1997), the City monitors three outfalls in the three major watersheds within the City: the Willamette River, Columbia Slough, and Johnson Creek. The Willamette River outfall in northwest Portland (OF 19) has a high percentage of industrial land use, while the other two outfalls drain a mix of residential, commercial, and industrial land uses. (This northwest Portland outfall is the one described above in Task 2: BMP-Specific Monitoring, under Industrial Stormwater Program Monitoring) These outfalls are monitored only during rainfall events that generate sufficient runoff.

Trend analyses for outfalls M1 and OF 19 were conducted in FY07-08. Insufficient data were available from outfall S45U, since data collection at this outfall only started in FY 06/07.

Results

Outfall – Data Summary

Sampling Locations	Date	Antecedent Dry Period (hours)	72-h Antecedent Rainfall (inches)	24-h Antecedent Rainfall (inches)	Total Event Rainfall (inches)	Sample Collection Time Rainfall (inches)
M1 Columbia Slough	11/26/2007	>72	0.00	0.00	0.35	0.35
	1/8/2008	26	0.53	0.00	0.89	0.79
	3/25-26/2008	50	0.32	0.00	0.47	0.43
S45U Johnson Creek	11/26/2007	>72	0.00	0.00	0.32	0.32
	1/8/2008	24	0.58	0.10	0.71	0.61
	3/25-26/2008	59	0.29	0.00	0.47	0.45
OF 19 Willamette River	11/26/2007	>72	0.00	0.00	0.32	0.32
	3/7-8/2008	>72	0.02	0.02	0.44	0.44
	3/25-26/2008	55	0.32	0.00	0.43	0.43

* As part of the City’s administration of 1200 Z and 1200 COLS industrial permits under a memorandum of agreement with DEQ (see BMP IND-1), the City also submits site-specific monitoring data for permitted facilities to DEQ on a routine basis, in compliance with the agreement.

Comparison to Selected Important Water Quality Standards/Criteria ¹

Outfall Name – Location	Comparison to Water Quality Standards/Guidance Values ²				
	Bacteria ³		Dissolved Copper ⁴	TSS ⁵	Total Phosphorus ⁶
	406 MPN/100 mL	126 MPN/100 mL	5 µg/L		
M1 – Columbia Slough	2/3	0/1	3/3	1/3	0/3
S45U – Johnson Creek	2/3	0/1	3/3	0/3	
OF 19 – Willamette River	0/3	0/1	2/3		

¹ Water quality standards or criteria do not apply to stormwater discharges and are listed here on as a reference.

² Number of samples that are below standard or guidance value/number of samples collected.

³ 406 MPN/100mL is the single sample standard; 126 MPN/100mL is the 30-day geometric mean of ≥ 5 samples. (For this summary, the geomean of all data collected throughout the year was calculated.)

⁴ Compared to NMFS guidance value for salmonids of 5 µg/L.

⁵ Compared to guidance value: Columbia Slough – 50 mg/L; Johnson Creek – 20 mg/L.

⁶ Spring to fall average compared to Columbia Slough TMDL of 0.155 mg/L.

M1

Concentrations of all analytes were within the range previously observed. E. coli concentrations were among the lowest observed since 1991, and two of the three samples were below the single sample instream criterion of 406 MPN/100 mL.

Between 29 and 49 data points were available for water quality trending analyses. Most analytes, including the heavy metals cadmium, copper, and lead, show a significantly ($p \leq 0.5$) or somewhat significantly ($p \leq 0.1$) decreasing trend. TSS, TDS, and phosphorus also show a significantly decreasing trend. The only increasing trend was observed for hardness, which has the benefit of making some of the heavy metals less toxic.

Overall, the quality of the stormwater discharge at outfall M1 has improved significantly since monitoring started in 1991. Considering that substantial development in this catchment has taken place during the monitoring period, it appears that the best management practices employed as part of the MS4 permit have been successful.

S45U

TSS and metals concentrations were clearly lower than last year, even though the rain events appear comparable. That means that unlike last year, the metals concentrations were within the range typically observed at outfall M1. Statistical analyses of the data will be conducted once about 15 data points are available. Trend analyses will require a minimum of 30 data points.

OF 19

Concentrations of all analytes were within but at the lower end of the range previously observed. Between 23 and 29 data points were available for water quality trending analyses. Of the heavy metals analyzed, cadmium, copper, lead, and dissolved zinc showed significantly or somewhat significantly improving trends. Since TSS does not show a decreasing trend, unlike most of the

heavy metals, it could be reasoned that cleanup efforts at industrial sites in this largely industrial catchment could be the cause of the metal reduction. On the other hand, the metal reduction at outfall M1 could be related to the reduction in sediment load.

Water Quality Trending

Location	M1			OF 19		
	Analyte	Date Range	N	Trend	Date Range	N
Total Cadmium (Cd,T)	5/7/91 - 1/8/08	37	↓	3/8/99 - 3/28/08	29	↓
Dissolved Cadmium (Cd,d)	5/7/91 - 1/8/08	36	↓	3/8/99 - 3/28/08	29	↓
COD	5/7/91 - 9/9/03	32	---	3/8/99 - 2/14/07	23	---
Total Copper (Cu,T)	5/7/91 - 3/25/08	49	↓	3/8/99 - 3/28/08	29	↓
Dissolved Copper (Cu,d)	5/7/91 - 3/25/08	49	↓	3/8/99 - 3/28/08	29	↓
Hardness	5/7/91 - 3/25/08	46	↑	3/8/99 - 3/7/08	28	---
Total Lead (Pb,T)	5/7/91 - 3/25/08	49	↓	3/8/99 - 3/28/08	29	↓
Dissolved Lead (Pb,d)	5/7/91 - 3/25/08	49	↓	3/8/99 - 3/28/08	29	↓
Ammonia-Nitrogen (NH ₃)	5/7/91 - 3/25/08	48	---	3/8/99 - 3/28/08	29	↓
Nitrate-Nitrogen (NO ₃)	5/7/91 - 3/25/08	49	---	3/8/99 - 3/28/08	29	↓
Ortho Phosphorus	5/7/91 - 3/25/08	49	↓	3/8/99 - 3/28/08	29	↓
Total Phosphorus	5/7/91 - 3/25/08	49	↓	3/8/99 - 3/28/08	29	---
Total Dissolved Solids (TDS)	8/9/91 - 3/25/08	44	↓	3/8/99 - 3/28/08	29	---
Total Suspended Solids (TSS)	5/7/91 - 3/25/08	49	↓	3/8/99 - 3/28/08	29	---
Total Zinc (Zn,T)	5/7/91 - 3/25/08	49	---	3/8/99 - 3/28/08	29	---
Dissolved Zinc (Zn,d)	5/7/91 - 3/25/08	49	---	3/8/99 - 3/28/08	29	↓
Conductivity	4/22/97 - 3/25/08	29	↓	3/8/99 - 3/28/08	26	---

- - N
 - ↑
 - ↓
 - ↑
 - ↓
 - 25
 - Improving trend
- No significant trend observed
Number of data points in trend analysis
Significant increasing trend (p < 0.05)
Significant decreasing trend (p < 0.05)
Somewhat significant increasing trend (0.05 ≤ p < 0.1)
Somewhat significant decreasing trend (0.05 ≤ p < 0.1)
Number of data points does not meet minimum requirement set by the MS4 trend analysis subcommittee (MTAS)

TASK 6: COLLABORATION WITH OREGON DEQ AND ACWA

Objective

The collaboration with other agencies and jurisdictions, including Oregon DEQ, Oregon ACWA, USGS, the City of Gresham, and Clean Water Services, allows the City to provide the most cost-effective services to its customers, as well as share knowledge and information to further the common goal of improving storm and surface water quality.

Accomplishments

The City continues to collaborate with DEQ and ACWA to share information and minimize duplication of efforts. Collaboration with ACWA includes participating in monthly stormwater and water quality subcommittee meetings and participating in joint efforts and projects (e.g., compilation and initial statistical analysis of MS4 stormwater discharge data collected by various MS4 jurisdictions; coordination of permit renewal among all six Phase I MS4 jurisdictions).

The City also participates in regular meetings with the Johnson Creek Interjurisdictional Committee (IJC). This committee deals with a variety of issues related to Johnson Creek and in the past has been instrumental in assisting DEQ with preparing a scientifically sound draft TMDL and furthering the understanding of water quality concerns and the hydrologic assessment of Johnson Creek in collaboration with USGS.

Results

The City participated in MS4 permit renewal coordination discussions with all six MS4 Phase I jurisdictions and DEQ, resulting in a better understanding of permit-related issues and agreement on monitoring and assessment strategies. The City was also instrumental in compiling stormwater discharge data collected by MS4 jurisdictions since 1996 in an attempt to update the 1997 ACWA report. Although the data were compiled and initial statistical analyses were conducted, this project was suspended because of heavy workloads resulting from the MS4 permit renewal submittal. This project may be continued in FY 08-09, along with an attempt to coordinate some elements of the MS4 permit-required monitoring among the Phase I jurisdictions.



**Multnomah County
Municipal NPDES Annual Report
Permit Year 13
July 1, 2007 – June 30, 2008
Portland Area Permit #101314**

Submitted November 1, 2008

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

I. INTRODUCTION

Multnomah County has implemented a comprehensive countywide stormwater management program since the issuance of the first Municipal Separate Storm Sewer System (MS4) NPDES permit in 1995. The goal of the program is to reduce pollutants in stormwater runoff to the maximum extent practicable. The program is maintained and prioritized in response to federal Clean Water Act requirements and the County's responsibility to protect the health and welfare of its citizens. The County is a co-permittee on two separate MS4 NPDES permits, one for the Portland area, and another for the Gresham area.

The stormwater management program consists primarily of Stormwater Management Plan (SWMP), which is implemented countywide. This plan is submitted to and approved by the Oregon Department of Environmental Quality (DEQ) under the NPDES permit. The County's roles and responsibilities for complying with the permit term falls under seven categories of Best Management Practices (BMPs) with a focus on operating and maintaining the County bridges and roads.

This Compliance Report for Permit Year 13 (July 1, 2007 through June 30, 2008) documents the implementation activities of Multnomah County's Stormwater Management Plan in the City of Portland NPDES permit area. The activities the County continues to engage in within the Portland permit area cover only a fraction (2%) of the permit area. For a full discussion of monitoring completed for this permit, please refer to the NPDES Annual Compliance Report Permit Year 13, submitted by the City of Portland.

The permit renewal process began during this Permit Year, which included an evaluation of the Stormwater Management Plan (SWMP). The evaluation led to a few changes to individual BMPs and new measurable goals. Generally, the changes were not substantive but were made to consolidate information where it was repetitive, eliminate information that was not relevant, remove information that was outdated, and improve the readability of the document. The rationale for the changes in the plan are given in the table in Section III, as well as in the Draft SWMP submitted to DEQ.

Description of the County's Permit Area

Within Portland's NPDES permit area, Multnomah County is only responsible for the operations and maintenance of five of the Willamette River bridges (Broadway, Hawthorne, Burnside, Morrison, and Ross Island Bridges) and for the development review of right-of-way connections in the small unincorporated pocket areas within the Portland Urban Services boundary.

Multnomah County's responsibility within the Portland Permit area has significantly diminished over the years. In 1984, the County transferred road and drainage facility

maintenance to the City for roads in the unincorporated pocket areas within the Portland Urban Services Boundary through an Intergovernmental Agreement known as the “Westside Pocket Area Maintenance Agreement”. The agreement ensures that road and drainage facility maintenance provided by the City is to be provided in a manner consistent with applicable operations and maintenance BMPs as set forth in the City of Portland’s Stormwater Management Plan under their MS4 NPDES Permit.

Multnomah County entered into an Urban Planning Area Agreement (UPAA) with the City of Portland as a result of the Metro Urban Growth Management Functional Plan in 1998. The UPAA provided for the coordination and orderly conversion of unincorporated urbanizable land in the County to urban uses and authorized the City to prepare applicable comprehensive plan and implementing ordinances for the County’s urban areas. The County adopted the City’s applicable land use regulations, comprehensive plan and zoning through County Ordinance 967, which went into effect January 1, 2002. Under the UPAA, the County agreed to transfer to the City responsibility for implementing and administering comprehensive plan and zoning regulations for all County unincorporated areas within the City’s Urban Services Boundary.

An important aspect of the UPAA is the expressed responsibility of the City to address, through their comprehensive plan and zoning regulations, erosion control, floodplain review, grading, and stormwater disposal. Further, land use planning review shall be provided by the City in a manner consistent with applicable best management practices as set forth in the City of Portland MS4 NPDES Permit. The level of review shall be provided at the same level provided by the City to other areas within the City limits.

II. STORMWATER MANAGEMENT PLAN OVERVIEW

The Multnomah County Stormwater Management Plan is a set of Best Management Practices (BMPs) designed to reduce stormwater pollutants to the maximum extent practicable. The County’s stormwater management plan is made up of thirty-five BMPs grouped into seven categories as shown below:

- Public Involvement and Education (PI);
- Operations and Maintenance (OM);
- Illicit Discharges Control (ILL);
- New Development Standards (ND);
- Structural Controls (STR);
- Natural Systems (NS); and
- Program Management (PM).

The plan includes a variety of structural and non-structural controls in managing stormwater; however, not all BMPs apply within the Portland permit area.

BMP Categories

Public Involvement and Education (PI)

The Public Involvement and Education BMPs are designed to inform and educate the public about the causes of stormwater pollution, the effects on local streams and rivers, and the need for stormwater management, and to encourage active participation in pollution reduction efforts.

Operations and Maintenance (OM)

Several activities are conducted by the County to address stormwater quality impacts from routine operations and maintenance activities both inside and outside the permit area. The County's Road Maintenance and Operation Manual describes the various maintenance activities performed by the County related to roadways and associated storm drainage facilities. The manual includes procedures for routine inspection and maintenance of facilities with the dual purpose of providing flood control and protecting water quality. A series of field logs are used along with the manual for use in tracking progress of the maintenance program and evaluating effectiveness over time. The County provides continued training to staff regarding record keeping and reporting requirements. County staff assesses the effectiveness of maintenance and adjusts methods and/or frequencies as needed to improve stormwater quality.

Illicit Discharges Control (ILL)

Illicit Discharges Control BMPs are designed to reduce the frequency and impact of accidental non-stormwater discharges to the stormwater system, and to control illicit connections to the MS4. Noticeable illicit discharges are reported to the appropriate agency for follow up action. Examples of this are private truck hauling practices, excessive littering, illicit connections, illegal dumping, and other leaks, spills or release of contaminants.

New Development Standards (ND)

New Development Standards (ND) BMPs are designed to mitigate pollutant discharges and other water quality impacts associated with new development and redevelopment during and after construction.

Much of Multnomah County’s jurisdiction in the original permit area has been annexed or transferred to by the Cities of Portland, Gresham, and Troutdale, since the first permit term. There is no unincorporated area within the permit area containing industrial or commercial facilities or park land.

Structural Controls (STR)

These BMPs are designed to implement structural modifications (constructed facilities) to existing systems/development to reduce pollutants in discharges from the municipal separate storm sewer system.

Natural System (NS)

These BMPs are designed to help preserve and restore the natural environment/functions to reduce pollutants in discharges from the municipal separate storm sewer system.

Program Management (PM)

Program Management BMPs ensure effective program management, coordination, and reporting. The County implements several other activities required by the NPDES regulations and additional activities in order to ensure the proper management and success of the program.

Functional Groups

Managers and staff in the Multnomah County Department of Community Services, Land Use and Transportation Division are organized into “functional groups” to implement the Stormwater Management Program. The functional groups are assigned specific BMPs, as described below:

- Public Affairs
- Bridge Engineering
- Bridge Maintenance
- Land Use and Transportation Planning
- Environmental Compliance
- Emergency Response
- Right-of Way Permits
- Road Maintenance
- Road Engineering
- Program Management

III. Best Management Practices Summary of Activity

Annual Compliance Reports for the Municipal NPDES Stormwater Permit are required to include information relating to each BMP task and schedule. The following matrices provide this information, in summary form, for each BMP. More detail is available upon request through documentation in the Multnomah County Transportation Division of the Department of Community Services.

The following matrix provides the following information:

- √ A short description of the Best Management Practice, with BMP Number.
- √ The overall intent, goals and objectives of the Best Management Practice.
- √ The Multnomah County 'Functional Group(s)' designated as responsible for BMP Implementation.
- √ Key accomplishments for Permit Year 13.
- √ Assessment of Controls.
- √ Any proposed modifications or changes to the schedule or activities.

Best Management Practices (BMPs) Matrix for Permit Year 13

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>Public Involvement and Education (PI). These activities are designed to inform and educate the public about the causes of stormwater pollution, the effects on local streams and rivers, and the need for stormwater management and to encourage active participation in pollution reduction efforts.</p>				<p>New measurable goals are proposed for in the new draft of the SWMP.</p>	
<p>PI1. Participate in <u>Regional Public Education Efforts</u>. Continue support and direct participation for public involvement and public education campaigns.</p>	<p>Participate with regional entities and cities in coordinating new and existing efforts to educate and inform the public about stormwater pollution problems, and to involve the public in developing stormwater pollution prevention programs. The County will provide support for the various public involvement and education activities provided by the Regional Coalition of Clean Rivers and Streams. The County will make staff and materials available as requested and practicable, and will grant volunteers and other clean-up groups access to the County right-of-way whenever feasible.</p>	<p>Public Affairs</p>	<ul style="list-style-type: none"> • The Regional Coalition for Clean Rivers & Streams focused this year's efforts to broadcast a television commercial encouraging the public to adopt habits at home and in their community that reduce stormwater pollution and improve the health of local rivers and streams. The ad ran on cable television stations that focus on home and garden interests. • Public Affairs staff participated in the reviews of the Coalition's website redesign project. The goal was to create a more interactive and simplified presentation with stronger, more cohesive visuals. The new website was launched in 2008, producing interest in the news media and an increase in traffic to the website. Public Affairs staff helped to promote the website to internal and external audiences. 	<ul style="list-style-type: none"> • Notes of meetings and annual report. • Participation in the coalition and evaluation of campaigns. 	<p>On schedule. No modifications.</p>
<p>PI2. <u>Participate in Public Meetings</u>. Present information to public regarding Multnomah County programs and regulation, particularly water quality program.</p>	<p>Educate the public about the County's role in protecting stormwater quality and the opportunities for public participation in pollution prevention as well as public involvement and education on stormwater pollution problems by attending public meetings.</p>	<p>Program Management</p>	<ul style="list-style-type: none"> • Water Quality staff attended meetings of the Johnson Creek watershed council. • The County sits on the the Lower Willamette Agricultural Water Quality Management Area Local Advisory Committee which developed water quality rules for agricultural practices under the authority of Senate Bill 1010. 	<ul style="list-style-type: none"> • Notes and records of meeting attendance. 	<p>On Schedule. No modification.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>PI3. <u>Distribute public education information regarding stormwater.</u> Brochures and educational materials at County offices, public water quality events, and maintenance of County Water Quality Program website.</p>	<p>Provide information to educate and inform the public about stormwater pollution problems and to encourage public involvement in stormwater pollution prevention programs.</p>	<p>Program Management</p>	<ul style="list-style-type: none"> • County participated at the 2007 Salmon Festival at Oxbow Park. County staff and volunteers staffed a booth with a working watershed model and other activities to learn about salmon and watershed health. • Various water quality BMP fact sheets are made available in County offices. • County's Water Quality website was updated. 	<ul style="list-style-type: none"> • Estimate number of brochures and educational materials. • Consider most effective venues for distribution of materials. 	<p>New Draft: The task to develop and implement a distribution strategy was removed because the County has limited outlets for materials for other agencies material and the County relies on other entities for public education programs. A new task was added to ensure that the educational materials that are distributed are current and cover relevant topics</p>
<p>PI4. <u>Training and education for County personnel</u> about impacts of on-the-job activities to the MS4, and how to minimize impacts to receiving streams. Include erosion control seminars, stormwater maintenance activities, inspection practices, construction BMPs, and other activities for in-house and field personnel. Include training and education relating to water quality learned in conferences. In addition, educate County staff about the public's role in protecting water quality on a watershed-wide basis.</p>	<p>Through training of County staff, minimize/eliminate the impact of on-the-job activities to the MS4 and stormwater quality.</p>	<p>All Functional Groups</p>	<ul style="list-style-type: none"> • Water Quality staff attended an ODOT Erosion Control Training. • Vegetation Management staff continued to attend regular meetings of the Cooperative Weed Management Areas group, in addition to local knotweed and garlic mustard control meetings. • Water Quality staff conducted new Road Maintenance staff orientation on environmental regulations and compliance, including stormwater management and ESA issues. • Water Quality staff gave an environmental regulation update and review for all Road Services staff. • Road Maintenance staff attended Emergency Spill Response Annual training. 	<ul style="list-style-type: none"> • Track attendance at water quality conferences, trainings, etc. • Track educational material disseminated to staff. • Keep records of trainings provided. 	<p>New Draft: The task to disseminate new training materials was removed because this task is already implicit in the task that is under this BMP to conduct training on new approaches to water quality protection.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
PI5. Implement the Multnomah County <u>Adopt-A-Road program</u> to promote public awareness of litter control and impacts to roads and waterways. Increase use of volunteers and track work by volunteers, including County inmate work crews.	Educate the public regarding the storm water pollution that results from littering. Work with citizen action programs to facilitate efforts to reduce littering.	Road Maintenance	<ul style="list-style-type: none"> • <i>BMP not implemented in the Portland permit area.</i> 	<ul style="list-style-type: none"> • N/A 	New Draft: The task to utilize inmate crews to pick up trash bags was removed because this is a consistent element of the program, not subject to change. This task was incorporated into a broader task of program support. Two tasks were also added: the first to promote the adopt-a-road program, and the second to provide program support such as providing equipment and coordination for volunteers.
PI6. Implement <u>Signage Programs</u> to Protect Stormwater Quality to promote public awareness of the importance of keeping pollutants out of storm drains as opportunities arise.	Reduce/eliminate the illicit discharges into street storm drains to protect water quality by reducing illicit discharges and impact by the public. Educate the public about drainage ways, impacts to streams from storm sewer systems, and watershed awareness.	Road Maintenance	<ul style="list-style-type: none"> • <i>BMP not implemented in the Portland permit area.</i> 	<ul style="list-style-type: none"> • N/A 	On Schedule. No Modification.
PI7. <u>Maintain Public Involvement during the CIP Process.</u> Ensure public involvement during two-year update process for Capital Improvement Plan and Program that addresses stormwater quality impacts and issues. Identify NPDES drainage issues and remedies on Capital Improvement Plan project scope sheets. Include in project atlas during public review process	Improve public awareness of properly designed stormwater facilities' ability to remove pollutants and protect water quality.	Transportation Planning	<ul style="list-style-type: none"> • No new projects were added to the CIP during 2007-2008, and therefore the full public process was not conducted. However, the Sellwood Bridge project is ongoing, and public involvement efforts around the environmental and planning stages of the bridge are continuing. 	<ul style="list-style-type: none"> • Record involvement in public meetings through regular CIP process. 	On schedule. No modifications.
PI8. <u>Facilitate Public Reporting of Illicit Discharges including illegal dumping</u> of pollutants, trash, or illegal fill (dirt/soil).	Control illicit discharges from illegal dumping to protect water quality.	Emergency Response Road Maintenance Bridge Maintenance Right-of-Way Permits	<ul style="list-style-type: none"> • No activity to report 	<ul style="list-style-type: none"> • Keep records of how problems are being corrected. 	On schedule. No modifications.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>Operations and Maintenance (OM). These activities are designed for the Implementation of operations and maintenance practices for public streets, bridges, storm sewers and other facilities to reduce pollutants in discharges from the municipal separate storm sewer system.</p>			<p>New measurable goals are proposed for in the new draft of the SWMP.</p>		<p>New Draft: <i>Review the RMOM for Potential Updates to Address Water Quality:</i> This is a new BMP that was added to the SWMP. RMOM is the County Road Maintenance and Operations Manual that provides guidance with respect to conducting road maintenance activities using procedures that minimize impacts to water quality. The County operations and maintenance BMPs are all conducted according to RMOM guidance. Therefore, this BMP was added to ensure that RMOM continues to stay up-to-date as the most appropriate guidance for the County with respect to water quality.</p>
<p>OM1. <u>Inspect and maintain the Storm Drainage System</u> including inlets, catch basins, water quality facilities and stormwater conveyance system on a regular basis</p>	<p>Ensure that inlets, catch basins, sumps and stormwater conveyance system are maintained in a manner that reduces pollutants to the maximum extent practicable. Continue to review and revise operations and maintenance procedures as appropriate.</p>	<p>Road Maintenance</p>	<ul style="list-style-type: none"> Catch basin storm filters inspected, maintained and replaced on Broadway and Burnside Bridges. The used filter cartridges are returned to the manufacturer for recycling. Routine bridge maintenance includes clearing debris and flushing drains every three months to ensure drains are not plugged and possible overflow. 	<ul style="list-style-type: none"> Review Field Logs to check that RMOM schedule and procedures have been followed. Review the records on a semiannual basis to evaluate the effectiveness of current practices and to help locate priority areas that may require more attention. Identify these areas on maps for use in planning future operations. 	<p>New Draft: The task to inspect sweeping equipment was removed because it is a routine activity covered under the Road Maintenance and Operations Manual.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>OM2. <u>Conduct street sweeping</u> to include scheduled sweeping, equipment review, and training on a regular basis. Revise and update schedule, equipment, and training as necessary.</p>	<p>The objective of the street sweeping program for county roads is to reduce materials on the roadway and impacts to the stormwater system. The County will continue to review and revise the program and schedule and make improvements as appropriate.</p>	<p>Road Maintenance</p>	<ul style="list-style-type: none"> • <i>BMP not implemented in the Portland permit area. County roads operated and maintained by agreement with City of Portland.</i> 	<ul style="list-style-type: none"> • Not Applicable 	<p>On schedule. No modifications.</p>
<p>OM3. <u>Properly dispose of road waste material.</u> Record amounts and location of material disposed. Test for disposal using an independent lab and record/file test results. Review different disposal procedures for street sweeping vs. Vector pad materials. Continue to investigate feasibility of decant facility for County waste materials. Work cooperatively among County divisions to reduce water quality impacts of site handling, storage, and disposal areas for material collected during road maintenance activities. The County has adopted DEQ/ODOT Road Waste Management Practices.</p>	<p>The objective of the road waste disposal operations for county roads is to reduce materials on the roadway and impacts to the stormwater system. The goal is to identify and implement practices for disposal of road waste materials that protect water quality. Monitor if current outdoor storage activities are contributing sediments to stormwater runoff. Recommend practices to control discharges as needed.</p>	<p>Road Maintenance Emergency Response</p>	<ul style="list-style-type: none"> • <i>County roads operated and maintained by IGA with Portland. Portland is responsible for proper disposal of road waste materials on County roads.</i> 	<ul style="list-style-type: none"> • Review records and study results, implement recommendations as practicable. 	<p>On schedule. No modifications.</p>
<p>OM4. <u>Evaluate anti-icing operations.</u> Investigate the potential to reduce the use of sanding materials for seasonal anti-icing operations. Continue testing of alternative anti-icing methods and materials (e.g., CMA). Prohibit the use of salt or glycol on the roadways. Collect sanding material distributed during storm events as soon as feasible. Continue collection and recycling of sand throughout the County's portion of the permit area.</p>	<p>Reduce harmful effects of roadway anti-icing activities and materials on water quality by proper sand collection methods and by prohibiting the use of glycol and salt.</p>	<p>Road Maintenance</p>	<ul style="list-style-type: none"> • <i>BMP not implemented in the Portland permit area. County roads operated and maintained by IGA with Portland.</i> 	<ul style="list-style-type: none"> • Not applicable. 	<p>New Draft: Tasks to prohibit the use of salt and glycol and to procure funding for the anti-icing program were removed because these are policies rather than actual tasks.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>OM5. <u>Regulate truck hauling practices to minimize pollutant discharges.</u> Review practices with field crews annually. Recommend revisions (if necessary) to limit occurrence of leaks, spills, or other releases. Continue to test and evaluate asphalt release agents for truck and tool cleanup, which use “environmentally-friendly” products.</p>	<p>Control discharges from truck hauling activities to the extent that they are impacting County right-of-way and/or the municipal separate storm sewer system.</p>	<p>Road Maintenance</p>	<ul style="list-style-type: none"> • Bridge and Road Crews are regularly briefed on proper hauling procedures. 	<ul style="list-style-type: none"> • Monitor number of problems, and response time to address observed problems. • Determine if occurrences of releases are occurring frequently or infrequently. Determine if problems are due to equipment, or due to personnel. Is more training needed? • Determine the potential water quality impacts of new products considered for use. 	<p>New Draft: Tasks relating to staff training and reviewing new product specifications were removed as these are already covered under either BMP PI – 4 (Conduct Training and Education for County Personnel), or BMP OM-1 (Review the RMOM for Potential Updates to Address Water Quality).</p>
<p>OM6. <u>Perform culvert maintenance</u> by inspecting and maintaining culverts in ways that minimize impacts to water quality. Consider opportunities to retrofit culverts to provide better water quality treatment. Continue to maintain culvert inventories. Make distinction as to whether culverts are fish passage culverts and adhere to appropriate maintenance procedure.</p>	<p>Determine if the frequency of current operation and maintenance practices allows for reduction of pollutants to the maximum extent practicable. Improve and retrofit as needed.</p>	<p>Road Maintenance</p>	<ul style="list-style-type: none"> • <i>BMP not implemented in the Portland permit area. County roads operated and maintained by agreement with Portland.</i> 	<ul style="list-style-type: none"> • Not applicable. 	<p>New Draft: This BMP was removed altogether as maintaining culverts is not a water quality measure. However, it is important to conduct culvert maintenance activities using procedures that minimize water quality impacts. These procedures are implemented by the County as already provided for in RMOM under BMP OM-1. Therefore, this BMP description was no longer needed.</p>
<p>OM7. <u>Conduct right-of-way and road shoulders maintenance</u> in ways that avoid and prevent future adverse water quality impacts Continue review of current maintenance practices.</p>	<p>The purpose of this BMP is to control and reduce the amount of sediments discharged to the receiving waters via the right-of-way. Sediments attract and adhere to other pollutants (heavy metals, oil/grease) and increased turbidity/sedimentation on channel bottoms impairs water quality and fish habitat.</p>	<p>Road Maintenance</p>	<ul style="list-style-type: none"> • <i>BMP not implemented in the Portland permit area. County roads operated and maintained by agreement with Portland.</i> 	<ul style="list-style-type: none"> • Not applicable. 	<p>On schedule. No modifications.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>OM8. <u>Conduct ditch maintenance.</u> Review frequency and timing of ditch cleaning in areas where sediment and/or debris tend to accumulate. Determine if the frequency and timing of current ditch maintenance practices allows for reduction of pollutants and minimizes the impact on ditch surface. (If not, recommend and implement improved frequencies, timing, and/or type of equipment to minimize damage to ditch bottom.) Using records, determine where improvements are needed to reduce discharges to ditches.</p>	<p>Control/reduce amount of sediments and pollutants discharged to the receiving waters. Sediments attract and adhere to other pollutants (heavy metals, oil/grease) and increased turbidity/sedimentation on channel bottoms impairs water quality and fish habitat.</p>	<p>Road Maintenance</p>	<ul style="list-style-type: none"> • <i>BMP not implemented in the Portland permit area. County roads operated and maintained by agreement with Portland.</i> 	<ul style="list-style-type: none"> • Not applicable. 	<p>On schedule. No modifications.</p>
<p>Illicit Discharges Control (ILL). These activities are designed to prevent, identify, investigate, and if appropriate, control/eliminate any non-stormwater discharges into the municipal separate storm sewer system.</p>				<p>New measurable goals are proposed for in the new draft of the SWMP.</p>	
<p>ILL1. <u>Interagency coordination on spill response.</u> Continue to work with regional HAZMAT teams on policy matters concerning water quality impacts. Continue cooperative agreements with other agencies to ensure spills are responded to and cleaned quickly. If necessary, clarify and/or improve procedures to ensure effective interagency coordination and rapid response.</p>	<p>Improve procedures to ensure effective interagency coordination and communication, and rapid response.</p>	<p>Emergency Response</p>	<ul style="list-style-type: none"> • No activity to report 	<ul style="list-style-type: none"> • No longer needed 	<p>New Draft: This BMP was removed as a spill response process has been developed and this BMP is no longer relevant.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>ILL2. <u>Implement Spill response in County areas.</u> Continue to manage the spill prevention and response program that reduces the frequency and impact of accidental non-stormwater discharges to the MS4. Revise County Road Maintenance Operation Manual (RMOM), if necessary, to include clear instructions for field personnel in the event of a spill. Improve use of absorbent materials for quick response to minor spills of oil or fluid. Keep records of incidents and response. Continue to coordinate response to appropriate incidents with cities.</p>	<p>Prevent spills to the maximum extent practicable. Respond to accidental non-stormwater discharges promptly to reduce the frequency and overall impact of spills to the stormwater system.</p>	<p>Emergency Response</p>	<ul style="list-style-type: none"> No activity to report 	<ul style="list-style-type: none"> Review logs on an annual basis. Review the RMOM as necessary to ensure revisions were made. Note evaluation in BMP file. 	<p>On schedule. No modifications.</p>
<p>ILL3. <u>Address spills from private truck haulers.</u> Review reporting of and action for noticeable private truck hauling practices causing discharges to County roads and the stormwater conveyance system. Work with County inspection officers for immediate response.</p>	<p>Control discharges from private hauling activities to the extent that they are impacting the County right-of-way.</p>	<p>Road and Bridge Engineering Right-of-Way Permits</p>	<ul style="list-style-type: none"> No activity to report in permit area. 	<ul style="list-style-type: none"> Construction inspectors monitor construction activities on a daily basis, with an emphasis on discharge control. Review agency response to reports by county staff. Work with agency to improve reporting and response procedures. 	<p>On schedule. No modifications.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>ILL4. <u>Erosion control for County contractors.</u> Implement requirements to control discharges from construction sites to ensure that construction practices do not release sediment and contaminants onto roadways or open space where they may be washed into storm drains or waterways. Continue to require erosion control measures in contract specifications. Continue to require cash deposits, performance-payment bonds, final inspections and other mechanisms to ensure compliance with permit requirements. Review erosion control permit requirements with contractors during projects. Inspect and review Erosion and Sediment Control Plans to ensure control of discharges. Continue pre-construction meetings to disseminate information about requirements to prevent damages during construction projects.</p>	<p>Assure that the design standards in place adequately address water quality issues throughout the permit area.</p>	<p>Road and Bridge Engineering Right-of-Way Permits</p>	<ul style="list-style-type: none"> No activity to report in permit area. 	<ul style="list-style-type: none"> Records kept of Erosion and Sediment Control Plan (ESCP) inspection activities. Review contractor ESCP to ensure compliance. 	<p>New Draft: Added a task to include requirements for pollution controls in contracts for public projects that address additional non-sediment related discharges (e.g., paints, solvents, metals, etc.).</p>
<p>ILL5. <u>Pollution control for County and contractors.</u> Implement a program to reduce, eliminate or recycle discharges of all other pollutants (other than sediment) from road and bridge construction and related sites including county facilities (paints, solvents, metals, etc.). Establish or improve regulations or policy as necessary. Continue inspection as part of daily routine. Continue record-keeping system for reporting any incidents of pollutants or debris. Provide training program to staff to monitor for pollution control.</p>	<p>Eliminate/reduce discharge of all pollutants from construction sites which adversely impact stormwater and receiving water quality.</p>	<p>Land Use and Transportation Planning Road Engineering Bridge Engineering</p>	<ul style="list-style-type: none"> No activity to report in permit area. 	<ul style="list-style-type: none"> Review annually, records kept by staff for the inspection and monitoring of construction sites. 	<p>This BMP was removed as the activities for this BMP were added to the BMP described above.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
ILL6. <u>Identify and investigate Illicit discharges.</u> Continue to implement a program to identify and investigate illicit discharges (illegal dumping of pollutants including trash, fill, oil, or toxic materials) to the storm sewer system. Report and follow up on reports by County staff when illicit discharges are discovered during the course of job duties.	Eliminate/reduce discharge of all pollutants from construction sites which adversely impact stormwater and receiving water quality.	Emergency Response Right-of-Way Permits Compliance Road Maintenance Bridge Maintenance	<ul style="list-style-type: none"> • Illicit discharge inspections conducted during routine maintenance practices. • Bridge Maintenance staff cleans under-ramps and stairs on all the Willamette River bridges to prevent trash and debris from entering the storm sewer system or waterway below. 	<ul style="list-style-type: none"> • Track follow up and inspection activities. 	On schedule. No modifications.
ILL7. <u>Identify and investigate sanitary discharges to the storm sewer.</u> Continue to implement a program to identify and investigate sanitary discharges to the storm sewer system. Continue a reporting and follow up procedure for County staff to follow when a cross-connection or illicit connection is discovered during the course of job duties.	Identify and investigate any possible sanitary discharges in the storm system.	Right of Way Permits Bridge Maintenance Road Maintenance Compliance	<ul style="list-style-type: none"> • Bridge Maintenance staff inspected and maintained sanitary facilities quarterly on the four Willamette River Bridge with restroom facilities. • <i>County roads operated and maintained by IGA with Portland. Portland inspects for illicit connections during road maintenance activities.</i> 	<ul style="list-style-type: none"> • Track inspections of the operation of the sewage holding facility for prohibited discharge. 	On schedule. No modifications.
New Development Standards (ND). These activities are designed to mitigate pollutant discharges and other water quality impacts associated with new development and redevelopment during and after construction.				New measurable goals are proposed for in the new draft of the SWMP.	
ND1. <u>Coordinate transfer of land use planning authority</u> from the County to the cities, which ensures continuous application of NPDES roles and responsibilities prior to transfer.	Much of the urban area is outside of County jurisdiction as it has been annexed to Portland, Troutdale or Gresham. As this area is transferred, the County will continue to coordinate to ensure continuous land use planning services including NPDES roles and responsibilities.	Land Use Planning	<ul style="list-style-type: none"> • No activity to report 	<ul style="list-style-type: none"> • Track plans reviewed within the permit area where appropriate. 	New Draft: This BMP was removed because the transfer itself is not a water quality BMP, but rather a part of the annexation process.
ND2. <u>Issue grading permits and hillside development permits</u> per County zoning code.	Control/reduce amount of erosion and sediments discharged to the receiving waters. Negative charged clay particles attract and attaches to pollutants (heavy metals, oil/grease). Increased turbidity/ sedimentation on channel bottoms impairs water quality and fish habitat.	Land Use Planning	<ul style="list-style-type: none"> • <i>BMP not applicable in the Portland Permit Area</i> 	<ul style="list-style-type: none"> • Track permits issued in permit area. • Track inspections and follow up of compliance. 	On schedule. No modifications.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>ND3. <u>Enforce stream setback requirements</u> and mitigation requirements for designated significant streams and identified waterways through Significant Environmental Concern and Willamette River Greenway permit reviews. Note this standard is for unincorporated areas of the County.</p>	<p>Preserve significant vegetated areas adjacent to identified water bodies to reduce stormwater runoff and the pollutants carried with it..</p>	<p>Land Use Planning Compliance</p>	<ul style="list-style-type: none"> • <i>BMP not applicable in the Portland Permit Area</i> 	<ul style="list-style-type: none"> • Review compliance with conditions of permit. • Review annual number of complaints against enforcement actions, including voluntary compliance. 	<p>New Draft: While the County still implements this BMP, it was removed as it was related to riparian health and is not relevant as a BMP with respect to the MS4. One task that was in this BMP that was maintained was the task to enforce land use and transportation code relating to water quality. This task was moved to, and included under the BMP - Stormwater Treatment for New Development.</p>
<p>ND4. <u>Regulate storm water quality and quantity.</u> Review stormwater regulations, design standards, and criteria, as issued by the City of Portland and other jurisdictions, and consider for use as guidance to regulate both stormwater quality and quantity associated with new and redevelopment activities. Specifically in the Interlachen area, review new development permit applications for appropriate stormwater quality and quantity controls. Implement appropriate stormwater controls (e.g., pollution plates on inlets, storage facilities, filtration inlets) throughout the County area. Apply County flood development standards for all new public and private new and redevelopment.</p>	<p>Implement localized design standards to adequately address stormwater quality and quantity issues throughout the permit area. Promote safe and sustainable development within the regulatory floodplains and floodways as defined by the 100-year flood boundaries.</p>	<p>Land Use Planning Right-of-Way Permits Road Engineering Bridge Engineering</p>	<ul style="list-style-type: none"> • No activity to report 	<ul style="list-style-type: none"> • Record evaluation of new standards. • Track the percentage for permit applications reviewed by County engineering staff to indicate if the design standards are met. • Conduct plan checks to ensure drainage standards are used. 	<p>New Draft: The task to review the new Portland standards and consider their adoption was removed because the task was completed. The task to continue to review driveway connections to the ROW and permit for cross culverts was also removed. As this activity is still conducted, it was not relevant as a water quality BMP.</p>
<p>Structural Controls (STR). These activities are designed to implement structural modifications (constructed facilities) to existing systems/development to reduce pollutants in discharges from the municipal separate storm sewer system.</p>				<p>New measurable goals are proposed for in the new draft of the SWMP.</p>	
<p>STR1. <u>Address water quality with new capital or roadway improvement projects.</u> Ensure that any capital improvement or road construction project considers long-term water quality protection, where feasible. Review the plans, design, and purpose of such stormwater quality treatment facilities.</p>	<p>Ensure that water quality facilities, built as part of a drainage/flood control capital improvement project or road construction project apply appropriate design standards to reduce the discharge of pollutants from sites to the maximum extent practicable.</p>	<p>Road Engineering Bridge Engineering</p>	<ul style="list-style-type: none"> • No activity to report 	<ul style="list-style-type: none"> • Track the number of stormwater treatment facilities installed as part of capital or road way improvement projects. • Keep records of design/permit reviews. 	<p>On Schedule No modifications</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
	Apply consistent practices in addressing water quality impacts.				
STR2. <u>Retrofit existing facilities for water quality benefit.</u> When major repair is needed, develop and implement retrofit of existing public drainage and flood control facilities (sumps, retention basins, drainage channels, bioswales, trash racks, sediment trap devices, etc.) where practicable to improve water quality. Install new systems according to current standards.	Continue sump replacement and retrofit of flood control facilities to improve pollutant reduction aspects of existing drainage and flood control facilities.	Road Engineering Bridge Engineering	<ul style="list-style-type: none"> No activity to report 	<ul style="list-style-type: none"> Record retrofit progress. 	On Schedule. No modifications.
STR3. <u>Inventory and map the County storm sewer system.</u> Improve knowledge of the County system to facilitate identification of problem areas and implementation of control programs in strategic locations. Allocate staff resources to ensure continued map updates.	Ensure County storm sewer mapping is accurate. This BMP supports the MS4 by providing valuable information allowing the County to effectively accomplish other elements of the NPDES permit requirements.	Road Engineering Bridge Engineering Road Maintenance	<ul style="list-style-type: none"> Water Quality and Bridge Engineering staff reviewed the GIS infrastructure layer and updated the outfall locations. 	<ul style="list-style-type: none"> Keep records of map updates. 	On schedule No modifications.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
<p>Natural System (NS). These activities are designed to help preserve and restore the natural environment/functions to reduce pollutants in discharges from the municipal separate storm sewer system.</p>			<p>New measurable goals are proposed for in the new draft of the SWMP.</p>		
<p>NS1. <u>Conduct vegetative management activities.</u> Continue to implement vegetation management procedures as in the Road Maintenance and Operations Manual (RMOM) to assure that water quality impacts are addressed. Include annual Oregon Department of Agriculture and EPA certification for pesticide applicators. Selectively use pesticides wherever applicable. Continue to improve application practices and train personnel to reduce pollutants to the maximum extent practicable.</p>	<p>Implement existing/improved practices to ensure that pollutants discharged from and into County rights-of-way (roads, ditches) are reduced to the maximum extent practicable.</p>	<p>Road Maintenance Bridge Maintenance</p>	<ul style="list-style-type: none"> • Bridge section continues to maintain vegetation on bridge abutments when necessary. 	<ul style="list-style-type: none"> • Review activities annually and determine if activities are conducted in accordance with the Road Maintenance Operations Manual. • Review activities annually and determine the success of integrated vegetation management techniques. • Keep records of employees who are certified pesticide applicators including continuing education units completed. 	<p>New Draft: Two tasks were added to this BMP: the first task was to selectively target invasive species for control; the second task was to review and update the Integrated Vegetation Management Program (IVM) during the permit term</p>
<p>NS2. <u>Encourage the use of native vegetation.</u> Promote the use of native vegetation on public and private projects. Utilize existing native plant lists for development review. Encourage use of self-sustaining native vegetation as well as Green Street Design practices which reduces the need for pesticides, fertilizers and water.</p>	<p>Reduce pesticide use and encourage use of self-sustaining vegetation as means of improving water quality.</p>	<p>Land Use & Transportation Planning Bridge Engineering & Maintenance Road Engineering & Maintenance</p>	<ul style="list-style-type: none"> • <i>Limited applicability in Permit area only in bridge right-of-way. The County no longer has planning or zoning authority within the permit area.</i> • <i>No activity of this BMP in the permit area.</i> 	<ul style="list-style-type: none"> • Implementation monitoring and compliance with vegetation plan. • Track number of permitted projects. 	<p>On schedule. No modifications.</p>

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 13	Assessment of Controls	Proposed Modifications to Schedule or Activities
Program Management (PM). These activities are designed to ensure effective program management, coordination and reporting.			New measurable goals are proposed for in the new draft of the SWMP.		
PM1. <u>Stormwater program management.</u> Develop and manage the Stormwater Program to ensure compliance with the NPDES permit. Implement cost-effective, practical BMPs and activities that are designed to reduce stormwater pollution to “the maximum extent practicable,” given the County’s unique jurisdiction.	Develop and manage the County’s stormwater program to ensure compliance with the NPDES permit. Develop and implement cost-effective, practical BMPs and activities that are designed to reduce stormwater pollution to the “maximum extent practicable.”	Program Management	<ul style="list-style-type: none"> Utilized e-mail to provide program updates to functional group members. Managed record keeping system for use by the County staff to track work done in the field, meetings attended, etc. 	<ul style="list-style-type: none"> Keep records of water meetings attended. Evaluate sufficiency of BMP program reporting by functional groups. 	On schedule. No modifications.
PM2. <u>Assess and evaluate the stormwater BMP program.</u> on a continuous basis assess and evaluate the BMP program to ensure use available resources, and make recommendations for improvements in program implementation tasks. Designate County staff to compile/summarize records for each BMP. Utilize BMP record-keeping system for evaluation of progress at regular work sessions with Stormwater Implementation Team.	Assess and evaluate program to ensure the best use of available resources and make recommendations for continuous improvement.	Program Management	<ul style="list-style-type: none"> Water Quality staff attended NPDES co-permittee meetings to discuss revision of County NPDES BMPs for permit renewal. Water Quality staff attended City of Portland Stormwater Advisory Committee meetings to discuss new measurable goals in Stormwater Management Plan. Water Quality staff has submitted a revised Stormwater Management Plan with the current permit renewal submittal package to DEQ. 	<ul style="list-style-type: none"> Keep records of work sessions, including training, evaluation process and results. 	On Schedule. No modifications.
PM3. <u>Maintain field records.</u> Continue to keep field records of maintenance activities Review annually and update as needed the Road Maintenance Operations Manual (RMOM), including procedures regarding water quality impacts to receiving streams based on the records of maintenance activities.	Use record keeping to track performance of BMPs over-time and to determine level of water quality protection provided. Adjust Stormwater Program and associated guidance manuals through adaptive management based on results reported in annual reports.	All functional groups	<ul style="list-style-type: none"> Road Maintenance staff enters BMP activity into the Road Information Systems database on a daily basis. BMP reports are entered in the Environmental Management database by all other functional groups. 	<ul style="list-style-type: none"> Staff review of field logs. 	On schedule. No modifications.

IV. STORMWATER MANAGEMENT PROGRAM BUDGET

Program activity within the Portland Permit area for Permit year 13 is primarily associated with the Department of Community Services – Land Use and Transportation Program.

Bridge Maintenance expenditures and anticipated budget allocations within the Portland Permit area incorporate items including, drainage maintenance, right-of-way, surface management, vegetation management, general administration, emergency road hazard response and training.

Bridge Engineering expenditures and anticipated budget allocations within the Portland Permit area incorporate drainage studies and reviews, environmental compliance review, as-built plan drafting and inventory, GIS database entry, and training.

Multnomah County Road Maintenance, through an Intergovernmental Agreement, contracts with the City of Portland to maintain and operate County owned roads consistent with applicable operations and maintenance best management practices as set forth in the City of Portland Stormwater Management Plan of the 1993 City of Portland National Pollution Discharge Elimination System Municipal Stormwater permit.

Road Engineering continues to retain authority to review access and impacts to the right-of-way including stormwater discharge when such discharges cannot be retained on site. Discharge from the undeveloped parcel is calculated and only that volume is permitted for access to County road drainages. There were only a handful of reviews conducted during permit year twelve.

Transportation Planning within the Portland Permit area includes development review in the unincorporated pockets where such development has the potential to access or impact the county right-of-way.

Funding sources for stormwater program expenditures are derived from the County general fund for the Land Use Planning program. The Transportation Division receives funding from the State Highway Trust Fund: revenue from this source include the State gasoline tax, weight/mile tax on trucks, and vehicle registration fees, which are constitutionally dedicated to road related issues.

The table below outlines program expenditures for PY 13 (Fiscal Year 2007-2008).and provides the anticipated budget for PY 14 (Fiscal Year 2008-2009).

Portland Permit Area Budget

Program Area	PY 13 Expenditures	PY 14 Anticipated Budget
Water Quality Program ¹	\$53,254	\$122,900
Bridge Maintenance/Operations	\$34,200	\$36,300
Bridge Engineering ²	\$15,326,600	\$18,994,000
Road Maintenance IGA	\$158,000	\$158,000
Road Engineering	\$8,800	\$9,100
Transportation Planning	\$2,250	\$2,750

¹The increase is attributed to a reformulation in this value due to a position change within the organization, and not a significant reallocation of resources.

²The amount shown represents the entire Bridge Engineering program. The entire program is included because we do not budget or collect charges for water quality tasks. Water quality best practices are integral in all aspects of design and construction and hence we are not able to be segregated from the other work.

V. MONITORING

The City of Portland performs this component of the Stormwater Management Plan within the Permit Area. Please refer to the City of Portland annual report for a summary of data including monitoring data accumulated throughout the reporting year, and identification of water quality improvements of degradation.

VI. OVERVIEW OF LAND USE CHANGES

The Permit under Schedule B(2)(a)(viii) of Permit No. 101315 provides; “An overview, as related to MS4 discharges, of concept planning, land use changes and new development activities that occurred within UGB expansion areas during the previous year, those forecast for the following year, and an evaluation for consistency with the requirements of Schedule D(2)(c)(i)(2).” The county has not had any land use changes that apply to the Portland Permit Area during this Permit Year.

Multnomah County Attorney's Office
501 S.E. Hawthorne Blvd., Suite 500
Portland, Oregon 97214

PHONE: 503.988.3138

FAX 503.988.3377



MEMORANDUM

To: File

FR: Sandra Duffy, Assistant County Attorney

DA: September 6, 2007

RE: Demonstration of Continued Legal Authority to Implement the Programs Outlined in the County Stormwater Management Plan

I have been asked by the Environmental Compliance Division to review the county's legal authority to implement the programs outlined in the stormwater management plan. My review included Chapters 11, 15, and 27 as those provisions pertain to stormwater issues.

I have reviewed these code provisions and have determined that Multnomah County has adequate legal authority as required by 40 CFR 122.26(d)(2)(i). Attached is a table that summarizes these requirement and the applicable Multnomah County Code provisions.

Multnomah County

Adequate Legal Authority

Requirement	Code Authority
Control through ordinance, permit contract, order or similar means, the contribution of pollutants to the municipal storm sewer by storm water <i>discharges associated with industrial activity</i> and the quality of storm water discharged from sites of industrial activity.	The County does not have industrial zoning within the permit area. However, MCC 27.764; MCC 27.768 provide general discharge regulations and limitations. MCC 11.15 (erosion control) provides the ability to require discharger to implement source controls. MCC 15.225- MCC 15.235 prohibits dumping and nuisances generally. MCC 37.0945 provides authority to enforce the prohibition of discharge of pollutants into waters of the state that violate water quality standards.
Prohibit through ordinance, order or similar means, <i>illicit discharges</i> to the municipal separate storm sewer.	MCC 27.773 provides for the prevention or termination of an illicit discharge to the storm sewer system. MCC 27.781 requires separation of the sanitary sewer system from the storm sewer system. MCC 15.225- MCC 15.235 prohibits dumping and nuisances generally.
Control through ordinance, order or similar means the discharge to a municipal separate storm sewer of <i>spills, dumping or disposal of materials other than storm water</i> .	MCC 15.235 prohibits dumping and nuisances generally. MCC 27.772 and MCC 15.225 prohibit spills or dumping of any material other than stormwater to the municipal separate storm sewer.
Control through interagency agreements among the co-permittees the contribution of pollutants form one portion of the municipal system to another portion of the municipal system.	A cooperative monitoring and stormwater management program exists between Multnomah County and the City of Gresham formalized in June 2004. Intergovernmental Agreements related to County roads and associated drainage exist between the County and the cities of Fairview and Gresham.
Require compliance with conditions in ordinances, permits, contracts or orders.	MCC 37.0910, 18.450, 27.773 and MCC 15.230 provide for the enforcement of permits, ordinances or orders.
Carry out all inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer.	MCC 37.0910, 18.450, and MCC 15.230 provide for the investigation and enforcement of permits, ordinances or orders.



PORT OF PORTLAND

**National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System Permit
Permit Number 101314**

ANNUAL REPORT NO. THIRTEEN

Fiscal Year 2007-08

(July 1, 2007 – June 30, 2008)

Prepared for:
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ACRONYMS

BMP – Best Management Practice
DEQ – Department of Environmental Quality
EMS – Environmental Management System
IER – Interim Evaluation Report
IGA – Intergovernmental Agreement
IPM – Integrated Pest Management
MEP – Maximum Extent Practicable
MFM – Marine Facilities Maintenance
MID – Marine and Industrial Development
MS4 – Municipal Separate Storm Sewer System
NPDES – National Pollutant Discharge Elimination System
PDX – Portland International Airport
PIC – Portland International Center
SWMP – Stormwater Management Plan
SWPCP – Stormwater Pollution Control Plan
TMDL – Total Maximum Daily Load
USB – Urban Services Boundary

1.0 INTRODUCTION

The Oregon Department of Environmental Quality (DEQ) regulates stormwater runoff from Port of Portland (Port) property through the Municipal Separate Storm Sewer System Discharge Permit No. 101314 (MS4 permit) and other National Pollutant Discharge Elimination System (NPDES) stormwater permits, including the 1200-Z, 1200-COLS and 1200-CA permits. This annual report describes activities specifically related to implementation of the Port's MS4 permit.

The Port and Multnomah County are co-permittees on the City of Portland's MS4 permit. As required under Schedule B(2)(a) of the MS4 permit, each co-permittee must submit an annual report, summarizing accomplishments and implementation of the Municipal Stormwater Management Plan (SWMP).

This annual report documents activity from July 1, 2007 to June 30, 2008 related to the Port's stormwater management efforts under the MS4 permit and SWMP. Each section of the report, with the exception of Sections 2.0 and 3.0, corresponds to the specific requirements in Schedule B(2)(a) of the MS4 permit. The report emphasizes efforts and activities associated with individual Best Management Practices (BMPs) from the Port's SWMP (as summarized in Section 7.0).

2.0 DESCRIPTION OF PORT OF PORTLAND PERMIT AREA AND RESPONSIBILITIES

The Port of Portland owns approximately 6,246 acres within the City of Portland (City) Urban Services Boundary (USB). Port property is divided into two primary operating areas: Aviation and Marine and Industrial Development (MID). Within the City USB, the Aviation Division consists of Portland International Airport (PDX), and the MID Division includes Marine Terminals 2, 4, 5 and 6 and the following industrial parks: Swan Island; Rivergate; and Portland International Center.

The Port also owns a number of undeveloped properties including wetland mitigation sites and part of West Hayden Island. PDX, the marine terminals, and the industrial parks are partially occupied by tenants, and the Port manages those tenant properties through lease agreements. Approximately 21% of Port property within the USB is leased to tenants. A more detailed description of the Port operating areas is included in Section 2.1.

Property owned by the Port is primarily zoned for commercial and industrial use. Many of these areas have regulated industrial activities that require DEQ-issued NPDES general industrial stormwater permits. Some of the industrial permit requirements overlap with the MS4 permit requirements. PDX and portions of Terminal 2 and 6 operate under DEQ-issued general industrial stormwater discharge permits (1200-Z and 1200-COLS permits). In addition, some tenants occupying portions of Terminals 2, 4, 5, and 6, and the industrial parks also operate under DEQ-issued general industrial stormwater discharge permits. For these areas operating under general industrial stormwater permits, several of the MS4 permit requirements would be

addressed through implementation of their industrial stormwater permits, specifically their Stormwater Pollution Control Plans (SWPCPs). Section 2.2 details the Port's MS4 permit responsibility.

2.1 Summary of Port of Portland Permit Area

2.1.1 Portland International Airport

PDX comprises an area of approximately 2,865 acres and is located in northeast Portland between the Columbia River and the Columbia Slough. The facility is owned and operated by the Port, and numerous aviation-related tenants also conduct operations at the facility.

Stormwater runoff from PDX property discharges into the Columbia Slough through a series of pipes and open channels and 11 major outfalls, and stormwater discharges are permitted under PDX's NPDES 1200-COLS General Industrial Stormwater Discharge Permit, issued and administered by DEQ. The 1200-COLS permit is structured to specifically address Columbia Slough Total Maximum Daily Load (TMDL) parameters, including dissolved oxygen, pH, nutrients, bacteria, and toxics. With the exception of the Oregon Air National Guard, which has its own 1200-COLS permit, PDX tenants whose operations require stormwater permits have the option of being co-permittees under PDX's 1200-COLS permit. In addition to the 1200-COLS permit, PDX also holds an NPDES Construction Dewatering Waste Discharge Permit, a City of Portland Pretreatment Permit, a Water Pollution Control Facility (WPCF) 1700-B Wastewater Permit, and an NPDES Anti-icing/Deicing Waste Discharge Permit. These additional permits and associated BMPs are not discussed in this report.

2.1.2 Marine Terminals

The Port has four active shipping terminals that are managed by the Port's MID Division. The terminals collectively occupy approximately 941 acres along the Willamette River (Terminals 2, 4, and 5) and Columbia River (Terminal 6). The terminals handle the shipping, receiving, and temporary storage of finished goods, agricultural products, and raw materials.

Because Terminal 6 discharges into two water bodies, the Columbia River and the Columbia Slough, the Port holds both a 1200-Z (Columbia River) and 1200-COLS (Columbia Slough) general industrial stormwater discharge permit for Terminal 6. The Port also holds a 1200-Z permit for the Port-managed area of Terminal 2. A number of properties located at Terminals 2, 4, 5 and 6 are leased to tenants. Some of these tenants also hold 1200-Z permits that are issued by DEQ and administered by the City. Unlike PDX, tenants do not have the option to be a co-permittee of the Port's 1200-Z permit.

2.1.3 Industrial Parks

The Port's MID Division manages the Port-owned industrial parks, including those at Swan Island, Rivergate, Willbridge Terminal, and Portland International Center (PIC), totaling approximately 1,623 acres. Two industrial park tenants hold 1200-Z permits that are issued by DEQ and administered by the City.

2.1.4 Undeveloped Properties

The Port's MID Department manages approximately 816 acres of undeveloped property within the City's USB. Stormwater management for undeveloped properties that discharge into the Port's MS4 is conducted under the Port's MS4 permit.

2.2 Summary of Port of Portland MS4 Permit Responsibility

Many of the requirements of the general industrial stormwater discharge permits overlap with requirements of the MS4 permit. A large proportion of area included in the Port's MS4 permit area is also regulated by these industrial stormwater permits, which have been issued to either the Port or to the Port's tenants.

The City is the lead permittee on the Port's MS4 permit. The City regulates stormwater on a city-wide basis with some implementation overlapping the Port's MS4 area. The Port and City coordinate permit management activities through an intergovernmental agreement (IGA).

Because of the complex relationship between the Port's management of stormwater through their MS4 permit, the City's overlapping stormwater management activities through their MS4 permit, and DEQ's regulation of stormwater on some Port property through other NPDES permits, the Table of Permit Requirements and Responsibilities (Table 2-1) was developed as part of the Port's SWMP to show how the Port's MS4 permit requirements align with the City's activities and industrial stormwater permit requirements and associated stormwater management activities conducted by the Port or Port tenants.

The Table of Permit Requirements and Responsibilities lists the SWMP requirements from the Port's MS4 permit along the left hand column. Responsibility descriptions for each SWMP requirement are split according to the following two categories: (1) Port MS4 permit areas that do not have industrial stormwater permits (1200-Z or 1200-COLS permits), and (2) Port MS4 permit areas where the Port or its tenant has a general industrial stormwater permit (1200-Z or 1200-COLS permits). The two responsibility categories are further split between tenants and Port operations. For some tenants and Port operating areas (Terminals 2 and 6 and PDX) with an industrial stormwater permit, some of the MS4 permit requirements related to specific activities are addressed through implementation of the industrial stormwater permits. MS4 permit requirements that are addressed through implementation of the industrial stormwater permit requirements are shown shaded gray on Table 2-1. In addition, some permit requirements do not apply to the Port as they are covered within the Port's jurisdiction by the City's activities. These requirements are also shaded in gray on Table 2-1. Areas left unshaded on Table 2-1 are addressed by BMPs in the Port's 2006 SWMP. The unshaded areas list the specific BMPs that meet the permit requirements.

Section 7.0 of this annual report outlines the BMPs listed in the Port's 2006 SWMP and specifies those parties responsible for implementation of tasks required to meet the goal of the BMP. In addition, Section 7.0 describes the various activities that the Port has conducted during the permit year to address the specific tasks under each BMP.

TABLE 2-1. Port of Portland MS4 Permit Requirements and Responsibilities

MS4 permit SWMP Requirements	MS4 Service Areas Not Covered Under Industrial Stormwater Permits		MS4 Service Areas With Industrial Stormwater Permits	
	Tenants	Port Operations (Terminals and Industrial Parks)	Tenants	Port Operations (Airport, Terminals (T2 and T6))
Schedule B(1)(a-d) Monitoring Component Requirements				
The Port must assist with monitoring efforts in conjunction with requirements as stated in Tables B-1 and B-2, Schedule B(1)(b)(i-vi), Schedule B(1)(c)(i-ii), and Schedule B(1)(d).	Pursuant to an IGA, the Port of Portland and the City of Portland have a joint monitoring program conducted by the City to meet the requirements specified under Schedule B.			
Schedule D(2)(c)(i) Implement structural and source control measures for existing and new residential and commercial areas.				
1. Maintenance activities and maintenance schedule for structural controls.	BMP: Implement a Stormwater System Cleaning and Maintenance Program.	Covered under 1200-Z and COLS permits ¹ - Schedule A.2.b.iii (1200-Z) and Schedule A.2.c.iii (1200-COLS)	Covered under 1200-Z and COLS permits - Schedule A.2.b.iii (1200-Z) and Schedule A.2.c.iii (1200-COLS)	
2. Planning procedures to control pollutant discharges from areas of new and redevelopment.	The City of Portland is responsible for implementing development standards for water quality structural controls.			
3. Practices for operating and maintaining streets.	The City of Portland is responsible for operation and maintenance of the public right-of-way.			
	BMP: Implement a Street and Vehicle Maneuvering Area Cleaning and Maintenance Program.			
4. Retrofitting flood control facilities.	The City of Portland manages water quality improvements on a master planning level.			
5. Monitor landfills.	The Port does not have any operating or closed landfills within its jurisdiction.			
6. Program to reduce pesticides/herbicides/fertilizers.	BMP: Limit Landscape Maintenance Activities Impact on Stormwater. BMP: Require Appropriate Training and Licensing for Pest Management Activities. BMP: Implement a Tenant BMP Program.			
Schedule D(2)(c)(ii) Detect and remove illicit discharges.				
1. Program, including inspections to eliminate illicit discharges.	BMP: Implement the Illicit Discharge Detection and Elimination Program.			
2. On-going field screening program.	BMP: Implement the Illicit Discharge Detection and Elimination Program.			

MS4 permit SWMP Requirements	MS4 Service Areas Not Covered Under Industrial Stormwater Permits		MS4 Service Areas With Industrial Stormwater Permits	
	Tenants	Port Operations (Terminals and Industrial Parks)	Tenants	Port Operations (Airport, Terminals (T2 and T6))
3. Field screening follow-up investigations.	BMP: Implement the Illicit Discharge Detection and Elimination Program.			
4. Spill prevention and response.	BMP: Implement a Spill Response Program for Port Operated Property. BMP: Implement a Spill Response Training Program.		Covered under 1200-Z and COLS permits – Schedule A.2.b.ii (1200-Z) and Schedule A.2.c.ii (1200-COLS)	
5. Promote public reporting of illicit discharges.	BMP: Implement Public Education and Public Reporting Measures to Protect Stormwater Quality.		Spill response activities address employee reporting and are covered under 1200-Z and COLS permits – see above	
6. Public education re: proper disposal of toxic materials.	BMP: Implement Public Education and Public Reporting Measures to Protect Stormwater Quality. BMP: Implement a Tenant BMP Program.		Covered under 1200-Z and COLS permits – Schedule A.2.b.i [3] (1200-Z) and Schedule A.2.c.i [3] (1200-COLS)	
7. Control infiltration from sanitary sewers.	The City of Portland is responsible for sanitary sewers City-wide.			
Schedule D(2)(c)(iii) Monitor pollutants from landfills and industrial facilities.				
1. Industrial inspection program.	BMP: Implement an Industrial Inspection Program.			
2. Industrial monitoring program.	The IGA between the City of Portland and Port contains some industrial monitoring elements. The City of Portland currently collects and analyzes samples from select permitted industries, and monitors multiple storm events at a select industrial outfall to evaluate industrial program effectiveness. Additionally, the Port uses accumulated monitoring information from the City of Portland to conduct individual, site-specific investigations. The Port also monitors industries suspected of illicit discharges as a result of illicit discharge investigations.		Covered under 1200- Z and COLS permits – Schedule B.1 and B.2	
Schedule D(2)(c)(iv) Develop a program to implement and maintain construction site BMPs.				
1. Procedures for site planning to address water quality.	If not covered by a 1200-C Permit, then covered under the City of Portland's erosion control ordinance.	Covered under the Port's 1200-CA Permit	If not covered by a 1200-C Permit, then covered under the City of Portland's erosion control ordinance.	Covered under the Port's 1200-CA Permit
2. Requirements for construction site BMPs.				
3. Procedures for inspection and enforcement.				

MS4 permit SWMP Requirements	MS4 Service Areas Not Covered Under Industrial Stormwater Permits		MS4 Service Areas With Industrial Stormwater Permits	
	Tenants	Port Operations (Terminals and Industrial Parks)	Tenants	Port Operations (Airport, Terminals (T2 and T6))
4. Education/training for construction site operators.	BMP: Provide Erosion Prevention and Sediment Control Training for Construction Inspectors			

Notes:

¹ Maintenance may be conducted by the Port as agreed upon in tenant leases.

Areas shaded in gray are MS4 permit requirements that are not specific Port responsibilities under the MS4 permit because the requirements are either covered by the City of Portland, or are covered under an industrial stormwater permit.

Areas unshaded are the responsibility of the Port and covered by the Port's SWMP BMPs.

3.0 PORT OF PORTLAND ORGANIZATIONAL STRUCTURE

The Port's Environmental Affairs Department is responsible for administering the MS4 permit and the SWMP. The Environmental Affairs Manager serves as the MS4 permit manager. Staff from the MID and Aviation Divisions are responsible for implementing Port environmental programs to ensure permit compliance. As a means of coordinating Port-wide programs and policies, environmental program managers regularly meet with Port operating area staff. One means of coordination between staff in Environmental Affairs, MID and Aviation divisions is through the Water Resources Coordination Group. This group includes staff from Environmental Affairs, Legal, Aviation, Marine, Public Affairs and Engineering. This group meets monthly and is responsible for coordination on Port-wide stormwater policy issues, water quality, and permit implementation. The Environmental Affairs manager serves as the lead for the Water Resources Coordination Group.

With respect to the implementation of the Port's general industrial stormwater discharge permits, PDX environmental staff prepares, updates, and ensures implementation of the PDX SWPCP in conjunction with the co-permittees. Marine environmental staff prepares, updates, and ensures implementation the SWPCP for Terminals 2 and 6. Tenants with industrial stormwater discharge permits are also required to prepare, maintain and implement SWPCPs. The City (DEQ's agent) coordinates directly with Port tenant permit holders.

4.0 STORMWATER EXPENDITURES

The Port's mission is to enhance the region's economy and quality of life by providing efficient cargo and air passenger access to global and national markets. In support of this mission, the Port annually undertakes budget and business planning to identify areas of focus and actions needed to address them.

The Port derives almost all revenue from business transactions with the users and tenants of Port facilities. A small proportion (approximately three percent) of the Port's overall revenue is from property tax. Business transactions generally occur between the MID Division, the Aviation Division (Commercial Aviation and General Aviation), and associated users and tenants of those properties. Revenue from the MID Division is primarily derived from fees, charges and leases with marine customers, leases with tenants of the Port's industrial parks, and sales of property at the industrial parks. The Port also receives revenue from the U.S. Army Corps of Engineers for dredging services.

Commercial Aviation (PDX) resources are derived primarily from charges to passengers and cargo airline customers, airport parking, rental car revenue, passenger facility charges, Federal grants, and tenant fees. PDX resources cannot be commingled with any other resources of the Port and are restricted for use at Aviation facilities by bond ordinances and Federal Aviation Administration (FAA) regulations.

The Port annually budgets resources to fund projects and programs identified in the Strategic Plan. Program expenses are allocated among divisions and departments involved in implementation of the program. Specifically, stormwater resources are allocated among the MID and Aviation divisions (PDX), Environmental Affairs Department, Information Technology (IT) Department, Legal Department, and Engineering Department. Expenditures include Port staff

salary (including fringe costs), permit fees, contractor and consultant fees, stormwater infrastructure costs, City of Portland stormwater fees, stormwater training and outreach materials.

The MID Division spent approximately \$1,035,772 in fiscal year 2007-08 on stormwater expenditures and estimates that expenditures for 2008-09 will be approximately \$1,071,585. PDX spent approximately \$2,590,672 on stormwater related expenses in fiscal year 2007-08, and plans to spend approximately \$2,607,415 for fiscal year 2008-09. Stormwater expenditures for the Port’s Engineering Department totaled approximately \$331,040 for fiscal year 2007-08, and plans to spend approximately the same amount for 2008-09. The Environmental Affairs Department spent approximately \$165,123 for stormwater related expenses in 2007-08 and projects that it will spend approximately \$169,575 in 2008-09. The total estimated 2007-08 stormwater expenditures by the Port were \$4,167,907 and the estimated total projected expenditures for 2008-09 are \$4,233,495.

Table 4-1. Summary of Port of Portland Stormwater Expenditures

Department	Estimated 2007-08 Stormwater Expenditures	Estimated 2008-09 Stormwater Expenditures
Marine and Industrial Development	\$1,035,772	\$1,071,585
Aviation	\$2,590,672	\$2,607,415
Engineering	\$331,040	\$331,040
IT	\$25,920	\$25,920
Legal	\$19,380	\$27,960
Environmental Affairs	\$165,123	\$169,575
Total	\$4,167, 907	\$4,233,495

5.0 DEMONSTRATION OF CONTINUED LEGAL AUTHORITY TO IMPLEMENT THE PROGRAMS OUTLINED IN THE SWMP

The Port has authority to implement programs outlined in the SWMP through ordinance, permits, and contracts.

The Port has statutory authority to enact ordinances to regulate stormwater sewers that it owns, operates, maintains, or controls. The Port Commission adopted Ordinance No. 361 in 1992, which provides the Port with legal authority over persons in possession of land owned by the Port. Ordinance No. 361 prohibits such persons from making, causing, or allowing an illicit discharge into a storm sewer owned or operated by the Port. Section 4 of the Ordinance requires written permission from the Port before connection to a Port storm sewer. Section 5 of the Ordinance authorizes the Port to inspect the land and storm sewers for violations of the Ordinance or applicable law that governs the conveyance or disposal of stormwater. In addition, the Ordinance provides the Port with authority to control the contribution of pollutants to storm sewers owned or operated by the Port; the quality of stormwater discharged from the sites of industrial activity on land owned by the Port; and the discharge to storm sewers owned or operated by the Port of pollutants from spills, dumping, or the disposal of materials other than stormwater.

In addition to the Ordinance, the Port has legal authority to control contribution of pollutants to the municipal storm sewer through contracts with Port tenants. Lease agreements require the lessees to comply with the Port's MS4 permit. Through these regulatory and contractual mechanisms, the Port works with tenants and users of Port facilities to implement BMPs that will control the contribution of pollutants to Port storm sewers.

6.0 STORMWATER MONITORING

The monitoring requirements of the Port's MS4 permit have been divided into two components: program monitoring and environmental monitoring. Program and environmental monitoring activities are established in order to meet the following requirements from the MS4 permit:

- i) Determine the status of implementing the components of the SWMP;
- ii) Evaluate the effectiveness of BMPs for specific source controls;
- iii) Evaluate the source of specific pollutants;
- iv) Assess the chemical, biological, and physical effects of MS4 runoff on receiving waters;
- v) Characterize MS4 runoff discharges; and
- vi) Evaluate long-term trends in receiving water quality associated with storm water discharges.

A description of each monitoring effort is provided below.

6.1 Program Monitoring

The Port's program monitoring activities are described as performance measures in their most recent approved SWMP, dated May 1, 2006 and approved by DEQ on July 31, 2006. The performance measures are specific indicator metrics that help assess the relative effectiveness of BMPs. The performance measures associated with various Port BMPs are provided in the SWMP, Tables 7-1 through 7-5.

6.2 Environmental Monitoring

The Port conducts environmental monitoring activities for their MS4 permit through an IGA with the City. The Environmental Stormwater Monitoring Program, originally submitted to DEQ in 1998, defines the Port's approach to meeting the MS4 permit monitoring requirements. The IGA, established in 1998, and amended in 1999, determines how the Port shares costs with the City for monitoring efforts including land use based monitoring, non-stormwater discharge monitoring, and BMP effectiveness monitoring.

6.3 Additional Stormwater Monitoring Activities

The Port collects and submits additional stormwater monitoring data to DEQ as required by the Port's various NPDES permits. Data collected for these permits is not included in the MS4 permit annual report but is available through DEQ upon request.

Stormwater sampling at PDX and Terminals 2 and 6 is required for general industrial stormwater permit compliance (1200-Z and 1200-COLS permits). Monitoring related to these industrial

permits is not conducted to address a specific MS4 permit requirement and thus is not submitted for compliance with the Port's MS4 permit; however, the monitoring provides useful data about stormwater discharge on Port industrial properties. Data resulting from the stormwater sampling has been and may continue to be useful for understanding water quality impacts from these different types of industrial land uses.

The Port submitted stormwater monitoring data to DEQ for the following industrial stormwater discharge permits:

- NPDES 1200-COLS Industrial Stormwater Discharge Permits, DEQ File No. 107220 (PDX)
- NPDES 1200-COLS Industrial Stormwater Discharge Permit, DEQ File No 111492 (Terminal 6)
- NPDES 1200-Z Industrial Stormwater Discharge Permit, DEQ File No. 103594 (Terminal 6)
- NPDES 1200-Z Industrial Stormwater Discharge Permit, DEQ File No. 114024 (Terminal 2)

7.0 ACCOMPLISHMENTS FOR PERMIT YEAR THIRTEEN (2007-08)

7.1 Introduction

This annual report content and format is based on the SWMP submitted to DEQ in May 2006 as part of the Interim Evaluation Report, required by Section B(2)(b) of the MS4 permit. The SWMP is structured into five major components. The first four components match the four major components of the MS4 permit (Schedule D(2)(c)(i through iv). Because public education and training activities meet a variety of permit requirements, BMPs addressing public education and training under the first four components have been grouped into a fifth component. The SWMP component and associated BMPs are listed below:

Component #1: Structural and Source Control BMPs to Reduce Pollutants from Commercial and Residential Areas:

- Implement a Stormwater System Cleaning and Maintenance Program.
- Implement a Street and Vehicle Maneuvering Area Cleaning and Maintenance Program.
- Limit Landscape Maintenance Activities Impact on Stormwater.

Component #2: BMPs to Detect and Remove Illicit Discharges and Improper Disposal into the Storm Sewer System:

- Implement a Water Line Flushing Procedure.
- Implement the Illicit Discharge Detection and Elimination Program.
- Implement a Spill Response Program for Port Operated Property.

Component #3: BMPs to Monitor and Control Pollutants from Industrial Facilities:

- Implement an Industrial Facility Inspection Program.

Component #4: BMPs to Reduce Pollutants in Stormwater Discharges from Construction Sites:

- The BMPs for this component have been grouped into the education BMPs under Component #5: Provide Erosion Prevention and Sediment Control Training for Construction Inspectors.

Component #5: Education, Coordination, and Public Involvement BMPs:

- Require Training and Licensing for Staff Conducting Pest Management Activities.
- Implement a Spill Response Training Program.
- Implement Education and Reporting Measures to Protect Stormwater Quality.
- Implement a Tenant Stormwater BMP Program.
- Provide Erosion Prevention and Sediment Control Training for Construction Inspectors.
- Coordinate with Other Governmental Organizations.

7.2 SWMP Implementation

The remainder of this annual report describes the Port's SWMP implementation during the 2007-08 fiscal year, categorized according to each of the BMPs outlined in Section 7.1. Each permit component is listed below along with the associated BMPs. For each BMP, the implementation tasks and associated accomplishments are listed. BMP activities conducted by the Port during 2007-08 are listed under the appropriate implementation task when applicable. In some cases, the Port conducted activities that were applicable to the BMP, but did not necessarily fit with a specific implementation task. Those activities are listed separately. Performance measures outlined in the SWMP are also described under the relevant BMP.

7.2.1 Component #1: Structural and Source Control BMPs to Reduce Pollutants from Commercial and Residential Areas

BMP: Implement a Stormwater System Cleaning and Maintenance Program

BMP Implementation Tasks and Associated Activities

- 1) Prioritize areas for inspection and develop an inspection and maintenance schedule. Update inspection priorities annually. (Responsibility: Marine and Industrial Development (MID) Environmental, MID Properties Maintenance, Marine Facilities Maintenance [MFM])
 - MID Environmental and MFM staff developed a maintenance matrix detailing all Port-managed marine terminal stormwater structures and related inspection schedules.
 - MID Properties Maintenance staff continued to update and implement the stormwater maintenance schedule for Port-managed non-marine industrial park properties.
- 2) Develop and implement inspection, cleaning and maintenance documentation system. (Responsibility: MID Environmental, MID Properties Maintenance, MFM)
 - MID Environmental and MFM staff continued to improve on maintenance documentation as part of the Port's Environmental Management System (EMS). MFM staff work closely with the MID Environmental staff to ensure all maintenance efforts are documented appropriately. Documentation is kept on file in the MID environmental offices and made available to Environmental Affairs staff.
- 3) Inspect and maintain stormwater conveyance system components (pipes, catch basins) annually or more frequently as needed. (Responsibility: MID Environmental, MID Properties Maintenance, MFM, PDX Maintenance)

- MFM staff conducted annual catch basin cleaning at Port-managed properties at Marine Terminals 2, 4 and 6. Catch basin filters in designated catch basins were also replaced during the annual cleaning.
- MID Environmental and MFM staff continued to implement a stormwater BMP waste disposal program for the collection and disposal of wastes generated during catch basin cleaning and pavement sweeping at the Port-managed areas of the marine terminals. The sweeping and storm sewer maintenance debris are stored in covered, watertight dumpsters in order to provide sediment and solid settling. As the volume reaches capacity and the solids have settled, the water is drained and disposed of via sanitary sewer disposal permit. The solids remaining in the dumpster are transferred to an adjacent dumpster for storage.
- MID Environmental staff contracted out storm sewer system pipe cleaning at a Port-owned parcel on Swan Island industrial park prior to its sale, on a Port-owned property on the lagoon-side of Swan Island and in one basin of Marine Terminal 4.
- MID Properties Maintenance staff contracted catch basin cleaning and filter replacement at the following sites:
 - Swan Island McCarthy Park parking lot
 - Swan Island Navigation facility
 - Terminal 5 Entry Road
 - Properties Maintenance Shop at Rivergate Industrial Park
 - Downtown corporate office building

The Port sold the corporate office building in 2008 and now holds a lease for the property. As a result, stormwater maintenance including catch basin cleaning and filter replacement is under the responsibility of the new owner. The SWMP has been revised accordingly.

The Port sold the Swan Island ship yard parking lot in 2008; therefore, catch basin maintenance is no longer conducted by the Port. The catch basins were cleaned prior to the sale and future cleaning is the responsibility of the new owner. The SWMP has been revised accordingly.

- PDX Maintenance conducts catch basin cleaning on a schedule throughout the airport.
 - Note: this BMP implementation task has been proposed for revision in the 2008 SWMP due to the infeasibility of cleaning storm sewer system pipes annually.
- 4) Identify catch basins on Port property that may not be included in the current maintenance program and incorporate these systems into the Port's program. (Responsibility: MID Properties Maintenance)
- MID Properties Maintenance did not identify any stormwater system components that are not yet on the maintenance program at the industrial park properties.
- 5) Inspect, maintain and repair (if necessary) structural stormwater controls (i.e., sedimentation manholes, hydrodynamic devices, filters, ponds, vegetated swales and oil/water separators)

annually or more frequently, as needed. (Responsibility: MID Environmental, MFM, MID Properties Maintenance)

- MID Properties Maintenance staff conducted spot-check inspections on tenant-managed catch basins at the industrial parks to verify tenant maintenance of the catch basin filter inserts. The Port initially provided the inserts to tenants under an agreement that tenants will continue to conduct the maintenance.
 - MFM inspected and maintained the following stormwater structures at the Terminal 2, Terminal 4 and Terminal 6 monthly in accordance with the MID Stormwater Maintenance Plan:
 - Three Downstream Defenders[®]
 - Twelve oil/water Separators
 - Four swales
 - Three StormFilters[®]
 - MFM staff installed 175 new catch basin filters at Terminal 6 and installed eight new filters at Terminal 4. Staff identified areas and budgeted for 25 new catch basin filters to be installed in 2008-09 at Terminal 6.
 - PDX installed a new StormFilter[®] in conjunction with the Airport Way realignment project. This system will be added to the maintenance plan.
- 6) Conduct litter pickup and vegetation management activities to ensure adequate access to all natural stormwater system features (swales, ponds) as needed. Properly dispose of all debris. (Responsibility: MID Environmental, MFM, MID Properties Maintenance)
- MID Properties Maintenance staff maintained landscaped areas within the industrial parks and marine terminals. Crews removed and disposed of vegetative debris, scrap metal, and garbage. Staff chipped and composted vegetative debris to create mulch and disposed of or recycled metal and garbage at appropriate facilities.
 - MID Properties Maintenance staff cleared vegetation around stormwater outfalls and culverts on industrial park properties to provide better access for inspections and illicit discharge monitoring.
- 7) Remove sediment build-up near pond inlet structures. (Responsibility: MID Environmental, MFM, Properties Maintenance)
- No activities were required to be conducted during the 2007-08 fiscal year, as the Port does not manage ponds within its jurisdiction any longer. This BMP task has been revised in the proposed 2008 SWMP.
- 8) Continue to update the map of stormwater system features. (Responsibility: Environmental Affairs)
- Environmental Affairs and maintenance staff continued to coordinate with Engineering and IT staff in order to update the Port-wide stormwater drainage maps as changes were identified.

- The Port's IT staff began development of a major upgrade to the GIS system, which will allow for more sophisticated tracking of stormwater features among other features. Environmental Affairs and IT staff have been coordinating to incorporate the appropriate data attributes into the new system.

BMP Performance Measures

- A total of 13,960 pounds of catch basin solids were collected at the marine terminals.
- A total of 117, 580 pounds of catch basin solids were collected during catch basin cleaning at PDX.

BMP: Implement a Street and Vehicle Maneuvering Area Cleaning and Maintenance Program

BMP Implementation Tasks and Associated Activities

- 1) Employ contract services to sweep the Port Center (Swan Island) parking lot annually. (Responsibility: MID Properties)
 - MID Properties staff continued to employ contract services to conduct pavement sweeping every other week at the Swan Island Industrial Park McCarthy Park parking lot. Maintenance (i.e., street sweeping and catch basin cleaning) for one of the leaseholds at the Port Center that was previously maintained by the Port was transferred to the tenant in 2007-08.
- 2) Sweep marine terminals annually. If additional sweeping is needed, coordination will occur between the appropriate parties. (Responsibility: MID Environmental, MFM)
 - MFM staff conducted pavement sweeping at Port-managed areas of Terminal 2, Terminal 4 and Terminal 6 annually. A total of 216,160 pounds of solids was recovered. The sweeping debris was transferred to a covered, watertight storage bin to prevent contact with stormwater runoff. The Port implements a sampling and testing schedule and procedure and disposes of the material appropriately.
- 3) Sweep Airport Way, Frontage Road and PDX employee parking lots twice per week. (Responsibility: PDX Maintenance)
 - PDX maintenance staff conducted the following sweeping activities twice per week in winter and once per week during the summer months: PDX airfield; Frontage Road; Airport Way; and PDX employee parking. A total of 426,820 pounds of street sweeping solids were collected at PDX.
- 4) Maintain and repair roadway and vehicle maneuvering areas to minimize pollutant impacts to stormwater as needed. (Responsibility: MFM, PDX Maintenance)

- PDX maintenance staff removed runway rubber twice in 2007-08 using a machine that contains and recycles the water used in the cleaning of the runway surface, eliminating surface water runoff generated during the process.
 - PDX maintenance staff maintains indoor storage areas, equipment wash-bays, and debris unloading areas.
 - PDX maintenance staff employs a toluene recovery system associated with its pavement maintenance operations. Through this system, decanted toluene is purified and reused and the waste paint residual is properly disposed.
 - MFM staff implement the Pavement Management Program at Port-managed properties at Marine Terminals 2, 4, 5 and 6 on an as-needed basis. The program involves resealing, striping, and repavement.
- 5) Track deicing activities in areas not applicable to the PDX Anti-icing/Deicing Permit. (Responsibility: MFM, MID Environmental, MID Properties Maintenance)
- MFM applied 6,400 pounds of deicing materials on main roads and common use sidewalk areas at the marine terminals in 2007-08.
 - MID Properties Maintenance staff did not apply any deicing materials on Port-managed areas at the industrial parks in 2007-08.

BMP Performance Measures

- 1) Record volumes and/or weight of material removed due to sweeping activities.
- A total of 216,160 pounds of street sweeping solids were collected at the marine terminals.
 - A total of 426,820 pounds of street sweeping solids were collected at PDX.

BMP: Limit Landscape Maintenance Activities Impact on Stormwater

BMP Implementation Tasks and Associated Activities

- 1) Apply pesticides and fertilizers, as needed, using an Integrated Pest Management (IPM) approach to minimize impacts to stormwater (Responsibility: MID Properties Maintenance, PDX Maintenance, MFM)
- MID Properties Maintenance staff continued to be responsible for the landscaping and maintenance of the Port's industrial parks, marine terminals, and mitigation sites. Staff continued to implement the IPM and Work Schedules Program for Port-owned mitigation sites. This program identifies problem plant species at each site, provides a profile for each species, recommends control methods, and outlines monitoring protocol and schedules.

- MID Properties Maintenance staff provided Port maintenance staff and Port-contracted workers with the *Vegetation Management Plan*. The plan provides information on the appropriate herbicides and use of those herbicides to control particular invasive plant species, and it identifies the locations where specific herbicides can be applied.
 - MID Properties Maintenance staff planted native plants in a 36,000 square feet area along the Willamette River at Terminal 4 as part of a capital improvement project. Native plants require less irrigation and pesticides than non-native vegetation.
 - MFM conducted weed control activities at marine parking areas, rail yards and specific vegetated areas at Marine Terminal 6 on an as-needed basis.
 - PDX Maintenance staff, responsible for landscaping at PDX facilities, continued to implement BMPs aimed at improving stormwater quality at the airport, including the following:
 - Maintaining the integrity and function of bioswales by keeping them full with healthy, mature vegetation;
 - Limiting the amount of turf and shrub fertilizer that falls on hard surfaces (e.g., sidewalks, roads, parking lots) by using small fertilizer spreaders, and blowing unintentional applications to these areas back onto the target areas; and
 - Using slow-release nitrogen fertilizers to limit leaching into groundwater and runoff into surface waters.
 - Replacing non-native grass with native grass to reduce irrigation and runoff.
- 2) Update the *Program Description for Pesticide and Fertilizer Use on Port Property*, as needed (Responsibility: Environmental Affairs)
- This document did not require an update during the 2007-08 fiscal year.
- 3) Update the *Technical Guidance Document for Pesticides*, as needed (Responsibility: Environmental Affairs)
- This document did not require an update during the 2007-08 fiscal year. Material Safety Data Sheets (MSDS) are available for the products in use at the Port.
- 4) Maintain a list of pesticides and fertilizers used on Port property (Responsibility: Environmental Affairs)
- Environmental Affairs staff updated the list of pesticides used on Port property.

BMP Performance Measures

- 1) Track the quantity of pesticides and fertilizers purchased annually.
- Table 7-1 lists the pesticide and fertilizer products and quantities purchased by each Port maintenance department in 2007-08.

Table 7-1. Port of Portland Pesticide and Fertilizer Use/Purchases 2007-08**MID Properties Maintenance Pesticide and Fertilizer Purchases**

Product Name	Total amt	Unit
Simazine 4L	40	gal
Casovan	300	lb
Snapshot	300	lb
Kicker Adjuvant	25	gal
Pendulum Aquacap	60	gal
Ranger Pro	30	gal
Ultra Defoamit	12	qt
Discard Airfit Retardant	6	gal
Atrimec	2	gal
Garlon3A	7.5	gal
Dimension	650	lb
Dimension Ultra	37.5	gal
Wasp Freeze	12	lb
Milestone	1	qt
Oust	3	lb
Aquamaster	5	gal
Powerzone	1	gal
Turf Custom Mix	1,750	lbs
Polyon predict fall/winter	6,750	lbs
Dolomite 10 AG Lime	600	lbs
Spring turf slow release N	5,000	lbs
Tree & Bed slow release N	4,600	lbs
PHC Terra Sorb Crystals	10	lbs

MFM Pesticide and Fertilizer Use 2007-08

Product Name	Quantity	Unit
Kicker Fertilizer	11.5	gal
Oust	256	oz
Garlon3A	18.5	gal
Ranger Pro	71.25	gal
Rodeo	10.5	gal

PDX Maintenance Pesticide and Fertilizer Purchases 2007-08

Product Name	Quantity	Unit
Krovar	400	lbs
Roundup	36	gal
Oust	12	oz
Escort	2	oz

PDX Landscape Pesticide Use 2007-08

Product Name	Quantity	Unit
Roundup	60	gal
22-3-22 turf fertilizer w/80% urea formaldehyde	30,000	lbs

7.2.2 Component #2: BMPs to Detect and Remove Illicit Discharges and Improper Disposal into the Storm Sewer System

BMP: Implement a Water Line Flushing Procedure

BMP Implementation Tasks and Associated Activities

- 1) Implement a water line flushing procedure in accordance with appropriate management practices for the disposal of chlorinated water. (Responsibility: PDX Environmental, MID Environmental, Environmental Affairs, MFM)
 - An EMS work instruction is required for staff which outlines the proper disposal of chlorinated water during water line flushing. The work instruction was distributed to MID Environmental and PDX Aviation environmental staff for implementation by the maintenance staff at Marine and PDX.

BMP: Implement the Illicit Discharge Detection and Elimination Program

BMP Implementation Tasks and Associated Activities

- 1) Implement the Illicit Discharge Detection and Elimination Program in accordance with the Port's *Illicit Discharge Detection and Elimination Procedure*. Follow outlined procedures for outfall inspections, sampling, investigation and documentation. (Responsibility: PDX Environmental, MID Environmental, Environmental Affairs)
 - Port environmental staff continued to implement the Illicit Discharge Detection and Elimination Program. The program outlines the following activities:
 - Enforcement of Port Ordinance 361, authorizing Port staff to inspect tenant facilities, restrict connections to the MS4, and impose penalties to known violators;
 - Dry season illicit discharge inspections of Port-owned outfalls; and
 - Investigation of potential illicit discharges.
 - For property managed by MID Environmental and Environmental Affairs staff conducted illicit discharge inspections at 59 outfalls as part of the annual dry season illicit discharge inspections at Terminals 2, 4, 5 and 6 and at Rivergate and Swan Island Industrial parks. This total number of outfalls includes 10 City of Portland outfalls and five privately-owned outfalls. No illicit discharges were discovered.
 - MID Environmental staff investigated one potential illicit discharge at a tenant-managed facility at Terminal 4. The storm sewer was cleaned and material was tested and disposed of appropriately.

- PDX Environmental staff conducted annual dry season illicit discharge inspections at 12 Port-owned outfalls at PDX and PIC. No illicit discharges were discovered.
- PDX Environmental staff investigated one illicit discharge at a tenant-managed facility. Staff coordinated with the tenant to develop and implement BMPs to control pollutants.

Additional Activities

- MID Properties Maintenance staff implemented agreements and contract provisions to control pollutant discharges to the Port's stormwater system. These include, but are not limited to tenant leases, construction dewatering agreements, storage tank use agreements, environmental specifications for construction projects, right-of-entry permits, operating permits, and mobile fueling permits.

BMP Performance Measures

- 1) Document the number and types of illicit discharges discovered.
 - MID Environmental staff inspected 59 outfalls as part of the annual dry season illicit discharge inspections at Terminals 2, 4, 5 and 6 and at Rivergate and Swan Island Industrial parks. This total included 10 City of Portland outfalls and 5 privately-owned outfalls. No illicit discharges were discovered.
 - MID Environmental staff investigated one potential illicit discharge that was discovered during routine inspections.
 - PDX Environmental staff inspected 12 Port-owned outfalls as part of the annual dry season illicit discharge inspections. No illicit discharges were found.
 - PDX Environmental staff discovered one illicit discharge during routine investigations and worked with the tenant to implement BMPs.

BMP: Implement a Spill Response Program for Port Operated Property

BMP Implementation Tasks and Associated Activities

- 1) Update, formalize and implement the *Spill Response Procedure for Marine and Properties*. (Responsibility: MID Environmental)
 - MID staff continued to implement the spill response procedure for Port-owned, non-aviation properties. Emergencies and spills are reported to the Marine Security Office who contacts the on-call MID Environmental Spill Response Coordinator. Procedures are posted throughout the marine terminals.
 - MID Environmental staff maintains a database to track spills on non-aviation, Port-owned property.

- MID Environmental staff conducted monthly inventories of all spill kits at Terminals 2 and 6.
- MID Environmental staff implemented updated Spill Prevention Control and Countermeasures Plans for Terminal 6 and the Navigation Facility.
- Port Environmental Affairs and MID Environmental staff met with City of Portland Bureau of Environmental Services staff to coordinate spill duties. A procedural flow chart was developed for spill response. Port staff also coordinated with the City's Spill Committee to update spill response coordinator contact information.

2) Participate in the City's Regional Spill Committee.

- MID Environmental staff continued to be an active member of the City of Portland's Regional Spill Committee.

3) Participate in the Clean Rivers Cooperative.

- The Marine and Industrial Development Department is no longer a member of the Clean Rivers Co-op. The Port opted to not participate in this group because as a public entity, the by-laws were incompatible with the Port's contracting rules. The Port continues to have 24-hour incident response capabilities provided by Port spill response staff and contracts with multiple on-call spill response vendors. No loss in functional capabilities will result from this change.

Additional Activities:

- Engineering continued to incorporate the construction specifications, *Environmental Practices for Construction*, into Port contracts. The specifications include measures for spill prevention and response.

BMP Performance Measures

1) Document the number of spills in which a spill response was conducted.

- MID Environmental staff responded to 47 reported spills during the 2007-08 fiscal year. MID Environmental staff maintained a log detailing the incidents and follow up activities.

7.2.3 Component #3: BMPs to Monitor and Control Pollutants from Industrial Facilities

BMP: Implement an Industrial Facility Inspection Program

BMP Implementation Tasks and Associated Activities

- 1) Update the inventory of facilities subject to the Superfund Amendment and Reauthorization Act (SARA) and priority industrial facilities annually. (Responsibility: Environmental Affairs)

- Environmental Affairs staff identified facilities subject to SARA on Port-owned property. Two facilities on Port property are subject to SARA. One facility was sold during the 2007-08 fiscal year.
 - Environmental Affairs staff coordinated with the Water Resources Coordination Group to identify priority facilities to be included in the 2007-08 Industrial Facility Inspection Program. Five facilities were identified for inspections in 2007-08.
- 2) Conduct annual inspections of SARA facilities, with the exception of the Oregon Air National Guard facility, as the Port is not authorized to inspect this federal location. (Responsibility: MID Environmental, PDX Environmental, Environmental Affairs)
- MID Environmental staff conducted an Industrial Facility Inspection at the one SARA facility on Port property.
- 3) Conduct inspections of priority industrial facilities annually, or more frequently if needed. Inspections may occur in conjunction with the illicit discharge investigations, if warranted. Priority facilities are those identified and described under the BMP description. (Responsibility: MID Environmental, PDX Environmental, Environmental Affairs)
- MID Environmental and MID Property Management staff conducted industrial facility inspections at one industrial facility at Terminal 2, one industrial facility at Terminal 4, two industrial facilities at Terminal 5, two facilities at Terminal 6, and one facility at the Wilbridge Terminal, for a total of seven facility inspections. One of the facilities at the Wilbridge Terminal scheduled for inspection was sold during 2007-08; therefore, the inspection was not conducted as the Port is no longer the property owner.
 - PDX Environmental and Property Management staff conducted industrial facility inspections at eight facilities at PDX. One planned facility inspection was postponed until 2008-09 due to scheduling issues.
- 4) Coordinate with tenant or Port property manager to identify appropriate control measures to minimize pollutant loading from priority industrial facilities. (Responsibility: MID Environmental, PDX Environmental, Environmental Affairs, MID Properties)
- No activity was conducted during the fiscal year 2007-08.

BMP Performance Measures

- 1) Document the number of SARA and priority industrial facility inspections conducted annually.
- MID Environmental and PDX Environmental staff conducted industrial facility inspections at one SARA facility, seven priority Marine and Industrial Development facilities and eight priority facilities at PDX.

7.2.4 Component #5: Education, Coordination and Public Involvement BMPs

BMP: Require Training and Licensing for Staff Conducting Pest Management Activities

BMP Implementation Tasks and Associated Activities

- 1) Require all chemical applicators (contractors and Port employees) to obtain and maintain licenses issued by the Oregon Department of Agriculture. (Responsibility: PDX Maintenance, MFM, MID Properties Maintenance)
 - Five MID Properties Maintenance staff hold the Oregon Department of Agriculture pesticide applicator's license and two additional staff will be applying for the license in the next fiscal year. Contractors hired by MID are required to hold the license. Annual training is required to maintain the license.
 - Four PDX general maintenance staff and four PDX landscape maintenance staff hold the Oregon Department of Agriculture pesticide applicator's license. Contractors hired by PDX are required to hold the license. Annual training is required to maintain the license.

BMP: Implement a Spill Response Training Program

BMP Implementation Tasks and Associated Activities

- 1) Require annual HAZWOPER training for designated operating area staff responsible for spill response and hazardous waste management (Responsibility: MID Environmental).
 - Nine MID Environmental staff participated in HAZWOPER training during the 2007-08 fiscal year.
- 2) Distribute updated emergency contact information and spill response procedures to employees responsible for responding to spills (Responsibility: MID Environmental).
 - The Marine and Industrial Development Spill Incident Management Plans have been revised. The spill reporting procedure is posted throughout the marine terminals and staff offices.
- 3) Conduct general spill training annually for designated employees (Responsibility: MID Environmental).
 - MID Environmental staff conducted annual spill response training for designated spill response coordination staff.
 - MID Environmental staff conducted annual spill awareness training for designated staff at the following departments: MID Properties Maintenance and MFM.

BMP: Implement Education and Reporting Measures to Protect Stormwater Quality

BMP Implementation Tasks and Associated Activities

- 1) Identify catch basins in public areas that do not have “Dump No Waste, Drains to Stream” decals and apply decals (MID Properties Maintenance, PDX Environmental, MFM).
 - MFM staff applied ten decals to catch basins throughout Marine Terminal 4.
 - MID Properties Maintenance and Environmental Affairs staff applied 60 catch basin decals at the new development in Rivergate Industrial Park Corporate Centers I and III.
 - PDX Maintenance staff applied approximately 200 catch basin decals at PDX throughout the industrial areas of the terminal.
- 2) Implement a public reporting program for potential illicit discharges by installing signs with notification information throughout Port property (Responsibility: Environmental Affairs, MID Property Maintenance, PDX Environmental).
 - This task was previously completed in the 2005-06 fiscal year. The signs continue to be maintained during 2007-08. The task has been revised in the proposed 2008 SWMP.

Additional Activities (Membership, Sponsorships, and Committee Participation)

- The Port is a financial supporter of the Regional Coalition for Clean Rivers and Streams. The Coalition is a group of agencies and municipalities in the Portland/Vancouver metro area dedicated to educating the public about the impact stormwater runoff pollution has on the health of our rivers and streams for people, fish and wildlife.
- As a member and financial sponsor of the Columbia Slough Watershed Council (CSWC), the Port continued to participate in implementation of the Columbia Slough Watershed Action Plan, which includes enhancement and restoration projects, water quality improvement projects, ecosystem educational programs, and public recreation opportunities. The Port sponsors several special outreach events each year to increase public involvement to improve the health of the watershed.
- The Port was a financial co-sponsor for the 2007-08 Oregon Environmental Council’s Forum for Business and the Environment speaker series. The Forum is the most highly attended statewide series, and has featured over 80 events and reached more than 5,000 of Oregon’s business and community leaders.

Additional Activities (Publications)

- The Port continued to publish *Port Currents*, a quarterly publication dedicated to informing the public about how Port projects, policies and news intersect with community and environmental issues. One issue featured the public comment period for the revised draft SWMP.

- The Port continued to publish *Portside*, a publication distributed to stakeholders three times per year featuring news and information about airports, marine terminals, industrial parks, and environmental programs.

Additional Activities (Staff Training and Education)

- Environmental Affairs, MID, and Aviation staff attended the Environmental Law Education Center Oregon Stormwater Conference. Sessions focused on TMDLs, water quality standards, and stormwater regulations.
- Environmental Affairs staff attended the Association of Clean Water Agencies (ACWA) annual conference. Many sessions are dedicated to stormwater and water quality issues.
- MID and Aviation staff attended the Environmental Law Education Center Stormwater Management Conference. Sessions focused on stormwater BMPs, legal issues, monitoring and technology.
- PDX Environmental staff attended the national StormCon conference, which is dedicated to discussions on stormwater issues and BMPs.
- PDX Environmental staff presented annual stormwater training for PDX general maintenance, PDX landscape maintenance, general aviation maintenance and Fire Department staff. Training covered stormwater regulations and BMPs.
- Developed a flyer outlining the Port's 2006-07 Environmental Objectives and Targets and distributed to Port stakeholders. One of the annual environmental objectives is to minimize impacts to water quality.
- Created a Port environmental video describing the Port's environmental programs including the Water Resources Program. Distributed the video to internal staff and external stakeholders.
- The Port staffed an outreach table at the Better Living Show, a sustainable lifestyle fair at the Portland Expo Center. Community education efforts included a stormwater pervious pavement demonstration and discussion of the Terminal 6 pervious pavement project and stormwater BMPs.
- The Port staffed a stormwater pervious pavement demonstration at the Port's employee earth day fair. The demonstration was a model of the Terminal 6 pervious pavement project designed to educate employees and the public on the benefits of stormwater infiltration to water quality.

BMP Performance Measures

1) Document all public education efforts.

- Public education efforts are documented under each implementation task above.

BMP: Implement a Tenant Stormwater BMP Program

BMP Implementation Tasks and Associated Activities

- 1) Maintain an inventory of all tenants (Responsibility: Environmental Affairs).
 - Environmental Affairs staff maintained a current inventory of Port tenants including those with NPDES permits issues by DEQ.
- 2) Implement a tenant BMP program and provide guidance documentation to the tenants (Responsibility: MID Environmental, PDX Environmental).
 - PDX Environmental staff continued to implement the PDX Tenant BMP Program. The program has evolved from formal meetings to more hands-on efforts in providing technical assistance and inspections to tenants. The number of tenant inspections has increased (Industrial Facility Inspection Program) during 2007-08 and the PDX Tenant program will continue to focus more on inspections and technical assistance in the next fiscal year.
 - PDX Environmental continued to coordinate the annual Aviation Tenant Environmental Excellence Awards for exemplary environmental efforts by tenants at port-operated airports.
 - MID Environmental staff provided technical assistance to tenants in regard to stormwater issues at their facilities.
 - MID Environmental and MFM staff worked with a tenant at Terminal 6 to design and install an oil/water separator in a new storm basin collection area.
- 3) Coordinate stormwater BMP lease language between MID, Aviation (PDX), and Properties and Development Services (MID Environmental, PDX Environmental, Environmental Affairs).
 - MID Environmental and PDX Environmental staff continued to be actively involved with the property managers in the development of environmental language for tenant leases.
- 4) Maintain an active property management role by conducting inspections of property vacated by tenants to ensure proper disposal of waste materials. Coordinate with the City of Portland to isolate, characterize and dispose of the waste if deemed toxic (Responsibility: MID Environmental, MID Properties, PDX Environmental, Environmental Affairs).
 - In addition to the industrial inspection program, PDX Environmental staff participated in nine tenant entry or exit inspections at PDX. Corrective actions were taken to remedy housekeeping issues.

BMP: Provide Erosion Prevention and Sediment Control Training for Construction Inspectors

BMP Implementation Tasks and Associated Activities

- 1) Provide annual erosion prevention and sediment control training for all Port construction inspectors (PDX Environmental).
 - PDX Environmental staff conducted annual erosion prevention and sediment control training for the Port's Engineering Department construction inspectors. Training addresses BMPs for Port construction projects.

Additional Activities:

- The Engineering Department requires Port contractors to implement the *Required Environment Practices for Construction* specifications in all construction projects. The specifications are designed to protect stormwater from contamination and has language addressing the Port's NPDES 1200-CA Stormwater Discharge Permit, File No. 101018. The Port's contract specifications for construction projects include requirements to prepare an erosion and sediment control plan (ESCP). The ESCPs are reviewed and approved by Port engineering and environmental staff. The provisions of the approved ESCP are ensured through specific enforcement of Port contracts. Port and City inspectors regularly inspect Port projects for conformance with the ESCP and jurisdictional requirements.
- MID Environmental continued to contract a part-time staff member to conduct erosion and sediment control inspections for new development at Portland International Center. The inspector works closely with the contractor to ensure proper implementation of construction stormwater BMPs.
- MID Environmental staff conducted erosion control inspections of construction sites and worked closely with construction inspectors to ensure the proper installation and maintenance of erosion control measures.

BMP: Coordinate with Other Governmental Organizations

BMP Implementation Tasks and Associated Activities

- 1) Participate with agencies and groups on water quality issues (Responsibility: Environmental Affairs).
 - Environmental Affairs, City, and Multnomah County MS4 staff met with DEQ Source Control and Surface Water Management staff to discuss co-permittee operations and responsibilities as they relate to MS4 permit management.
 - Environmental Affairs staff conducted a Port-wide tour of Port facilities for DEQ Source Control and Water Quality Technical Services staff and discussed Port facilities, roles and responsibilities.

- Environmental Affairs staff met with DEQ Water Quality Division staff to discuss roles, responsibilities and stormwater permit implementation.
 - The Port continued to implement the IGA with the Multnomah County Drainage District (MCDD) to maintain flow, stormwater ditches, pipes, and sumps within PIC and portions of PDX.
 - The Port continued to implement the IGA with the City Bureau of Environmental Services to coordinate responsibilities under the MS4 permit programs.
 - The Port remained actively involved with the following organizations with projects aimed at improving source and non-point source control practices:
 - Columbia Slough Watershed Council
 - Columbia Slough Watershed Council Action Plan Implementation Committee
 - Columbia Slough Watershed Council Outreach Committee
 - Oregon Association of Clean Water Agencies
 - Willamette River Restoration Initiative
 - City of Portland's River Renaissance
 - City of Portland Watershed Science Advisory Group
 - City of Portland Stormwater Advisory Committee
 - City of Portland Regional Spill Committee
 - Smith and Bybee Lakes Wetlands Management Committee
 - Lower Columbia River Fish Recovery Stakeholders Team
 - The Port continued to coordinate with the following public agencies on stormwater-related projects and programs:
 - U.S. Army Corps of Engineers
 - Oregon Department of State Lands
 - Oregon Department of Environmental Quality
 - Multnomah County Drainage District
 - Multnomah County Vector Control
 - City of Portland Bureau of Environmental Services
 - City of Portland Water Bureau
 - Metro
- 2) Review and renew the IGA with the City of Portland to combine efforts related to water quality monitoring and analysis (Responsibility: Environmental Affairs).
- The Port and the City renewed the MS4 permit IGA.