## 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. 14

Fiscal Year 2008-2009 (July 1, 2008 – June 30, 2009)

Prepared for:

**Oregon Department of Environmental Quality** 

**November 1, 2009** 

Submitted by:

City of Portland Multnomah County Port of Portland 1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 • Dan Saltzman, Commissioner • Dean Marriott, Director

October 30, 2009

Doug Drake
Lower Willamette Basin Coordinator
Northwest Region Water Quality
Oregon Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987



Dear Mr. Drake:

On behalf of the City of Portland and its co-permittees, I am pleased to submit the enclosed NPDES Annual Compliance Report No. 14. This report fulfills reporting requirements for the Portland NPDES Municipal Separate Storm Sewer System (MS4) Discharge Permit. Accomplishments for the 14<sup>th</sup> fiscal year of the permit program (July 1, 2008 through June 30, 2009) 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,

Cadrico Mango
Patrice Mango

Stormwater Program Manager

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

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

#### ANNUAL COMPLIANCE REPORT Fiscal Year 2008-09

(July 1, 2008-June 30, 2009)

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

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# **EXECUTIVE SUMMARY**

#### **EXECUTIVE SUMMARY**

#### INTRODUCTION

This 14<sup>th</sup> 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 14<sup>th</sup> fiscal year (July 1, 2008 through June 30, 2009) 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 second (current) permit in March 2004, beginning a second-five year permit term with an expiration date of February 28, 2009. DEQ subsequently revised and reissued the permit on July 27, 2005, retaining the same expiration date.

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 (SWMP) for each co-permittee, which describe the measures the co-permittees will implement throughout the second permit term. 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 that were submitted with the IER in 2006. Pending permit reissuance for the third term, DEQ has administratively extended the current permit.

This Annual Compliance Report reports on activities conducted in accordance with the SWMPs submitted in 2006, which will remain in effect until DEQ issues the third-term permit and approves the revised 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, BES System Plan, Combined Sewer Overflow (CSO) Program, Endangered Species Act (ESA) Program, Underground Injection Control (UIC) Program, Total Maximum Daily Load (TMDL) Program, and Portland Harbor Superfund Site.

Key activities and accomplishments for permit year 14 are summarized below and described more fully in Section II of this annual report.

- Completed the 2008 revision of the Stormwater Management Manual (which took effect October 2008). Permitted approximately 3,215 private building permits and 22 public works permits.
- Continued to implement the Grey to Green initiative, with 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 ongoing assessment, cleaning, and maintenance of MS4 components.
- 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 152 inspections and follow-up of regulated businesses under the program.
- Collected approximately 4,050 cubic yards of debris from streets that drain to the MS4 or directly to surface waters.
- Inspected, sampled, and administered the permits for 142 industries (and associated tenants) with stormwater discharge to the MS4.
- Continued to identify, investigate, control, and/or eliminate illicit discharges through the Illicit Discharges Elimination Program, Industrial Stormwater Management Program, and Spill Section.
- Continued to implement measures to limit impacts from non-stormwater discharges related to City operations, per the Non-stormwater Discharge Evaluation Report completed in May 2006.
- Conducted 6,069 erosion control-related inspections of private construction sites (citywide). Inspected 290 active public construction projects (citywide) 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 890 source control measures at sites with high-risk characteristics or activities.
- Continued the design and construction of multiple structural stormwater management facilities.
- Completed conversion of 1,230 linear feet of roadside ditches to swales or porous shoulder.
- 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 FY08-09, a total of 32,997 utility ratepayers with active accounts have registered for stormwater discounts: 31,563 single-family residential ratepayers (accounting for a total of 70,269,767 square feet of impervious area managed for stormwater) and 1,434 multifamily, commercial, and industrial ratepayers (accounting for a total of 29,477,293 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. The plan was endorsed by the Planning Commission in June of 2009 and will be forwarded to City Council in the fall of 2009.
- Continued regulatory improvement and code maintenance work, including changes that support watershed health and onsite stormwater management.
- Under the Watershed Revegetation Program, initiated 190 acres of new projects to be planted in future years. The program currently manages 1,959 project acres on both public and private property.
- Acquired approximately 5.8 acres of floodplain property under the Johnson Creek Willing Seller Program.
- Continued to implement the stormwater monitoring program.

#### **MULTNOMAH COUNTY**

Multnomah County continued implementation of its comprehensive stormwater management program countywide in permit year 14. Section III of the annual report contains descriptions of

the County's stormwater management efforts, focusing primarily on Willamette River bridge activities within the permit area.

- New upgrades to the Morrison Bridge included the installation of catch basin stormwater
  filters to treat stormwater from the bridge deck. The sidewalk construction was inspected to
  ensure construction debris and pollutants were controlled with erosion and pollution control
  best management practices.
- The Bridge Maintenance section continued routine bridge maintenance activities, following best management practices. Annual inspection and replacement of catch basin stormwater filters on the Burnside and Broadway Bridges was completed.
- Beyond the bridges, the County continued its education efforts, including its partnership with the Regional Coalition for Clean Rivers and Streams and participation in the Oxbow Park Salmon Festival.

#### PORT OF PORTLAND

The Port of Portland continued to implement its SWMP, approved by DEQ in July 2006.

The Port's annual report for permit year 14 summarizes requirements per Section B(2)(a) of the Port's current MS4 permit (dated March 2004). 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 2006 SWMP. Key accomplishments are summarized below.

- The Port of Portland coordinates with the Portland co-permittees, particularly the City of Portland, with regard to monitoring and overall MS4 coordination.
- The Port conducts annual maintenance of the storm sewer system components on specific Port-managed properties.
- Port staff continues 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 implements the Industrial Facility Inspection Program, increasing the number of industrial facilities inspected annually by Port staff.
- Port staff continues to provide and receive training on a variety of stormwater-related subjects and activities, including pest management, spill response, erosion and sediment control, and water quality.
- The Port continues its partnership with the Regional Coalition for Clean Rivers and Streams, which is dedicated to educating the public about the impacts of stormwater runoff pollution on the health of our rivers and streams.

# Section I GENERAL INTRODUCTION

## Section I GENERAL INTRODUCTION

This 14<sup>th</sup> 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 14<sup>th</sup> fiscal year (July 1, 2008 through June 30, 2009) 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 areas that flow to sumps
  - Stormwater areas that flow to combined sewers
  - 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 6,202 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 term of the permit is 5 years and can be 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 with an expiration date of February 28, 2009. DEQ subsequently revised and reissued the permit on July 27, 2005, retaining the same expiration date.

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 (SWMP) for each co-permittee. The SWMPs describe the measures the co-permittees will implement throughout the second permit term 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 expiration date of February 28, 2009), which includes proposed revisions to the SWMPs that were submitted with the IER in 2006. Pending permit reissuance for the third term, DEQ has administratively extended the current permit.

This Annual Compliance Report reports on activities conducted in accordance with the SWMPs submitted in 2006, which will remain in effect until DEQ issues the third-term permit and approves the revised SWMPs.

#### 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 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 14<sup>th</sup> annual report covers the period from July 1, 2008 through June 30, 2009. 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 by each co-permittee 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 14<sup>th</sup> fiscal year (July 1, 2008 through June 30, 2009) 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**

- Completed the 2008 revision of the Stormwater Management Manual (which took effect October 2008). Permitted approximately 3,215 private building permits and 22 public works permits.
- Continued to implement the Grey to Green initiative, with 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 ongoing assessment, cleaning, and maintenance of MS4 components.
- 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 152 inspections and follow-up of regulated businesses under the program.
- Collected approximately 4,050 cubic yards of debris from streets that drain to the MS4 or directly to surface waters.
- Inspected, sampled, and administered the permits for 142 industries (and associated tenants) with stormwater discharge to the MS4.
- Continued to identify, investigate, control, and/or eliminate illicit discharges through the Illicit Discharges Elimination Program, Industrial Stormwater Management Program, and Spill Section.
- 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.
- Conducted 6,069 erosion control-related inspections of private construction sites (citywide). Inspected 290 active public construction projects (citywide) 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 890 source control measures at sites with high-risk characteristics or activities.
- Continued the design and construction of multiple structural stormwater management facilities.
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- 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 FY08-09, a total of 32,997 utility ratepayers with active accounts have registered for stormwater discounts: 31,563 single-family residential ratepayers (accounting for a total of 70,269,767 square feet of impervious area managed for stormwater) and 1,434 multifamily, commercial, and industrial ratepayers (accounting for a total of 29,477,293 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. The plan was endorsed by the Planning Commission in June of 2009 and will be forwarded to City Council in the fall of 2009.
- Continued regulatory improvement and code maintenance work, including changes that support watershed health and onsite stormwater management.
- Under the Watershed Revegetation Program, initiated 190 acres of new projects to be planted in future years. The program currently manages 1,959 project acres on both public and private property.
- Acquired approximately 5.8 acres of floodplain property under the Johnson Creek Willing Seller Program.
- Continued to implement the stormwater monitoring 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 with an expiration date of February 28, 2009. DEQ subsequently revised and reissued the permit on July 27, 2005, retaining the same expiration date. Pending permit reissuance for the third term, DEQ has administratively extended the current permit.

#### **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 14, 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 14, and no expansions are expected in permit year 15.

#### STORMWATER OUTFALLS

#### **Separated Sewer Outfalls**

In FY08-09, 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 2008-2009, WIF funding, averaging \$1,500,000 per year, supported 15 BES projects throughout the city of Portland. Projects included highest-priority stream and slough restoration projects, green streets, and other stormwater retrofit projects.

*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 2010. 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 2009 and will be completed in 2012.

#### **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 (approximately9,000). In accordance with WPCF permit conditions, the City has developed and is implementing the *UIC Management Plan*, including BMPs, a monitoring plan, a spill response plan, an operations and maintenance plan, and a corrective actions 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, Tualatin River (Fanno and Rock Creek), Johnson Creek, and 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. That plan includes a variety of best management practices, largely based on the MS4 Stormwater Management Plan, that emphasize stormwater pollutant prevention and management, as well as erosion controls. The plan also includes watershed-specific 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. The first annual TMDL report is due November 1, 2009.

#### 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. In addition, the Columbia River is home to 13 ESA-listed salmon and steelhead and is designated as critical habitat for all of these species along the Portland city boundary.

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 has identified actions for improving upland and riparian watershed conditions and is

now in the process of coordinating those areas with high-priority stormwater areas to promote stormwater solutions that also include terrestrial benefits.

#### **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 \$653 million in stormwater management services and facilities during permit years 1 through 14. The revenue requirements for permit year 14 totaled approximately \$75.1 million, allocated as follows:

Major Program Category	Requirements	Percentage Share
Enforcement and Development Review	\$ 7.1 million	9%
Watershed Program & Habitat Restoration	14.4 million	19%
Facilities Operations and Maintenance	19.4 million	26%
Capital Improvements*	34.2 million	46%
<b>Total Revenue Requirements</b>	\$ 75.1 million	
# T 1 1 1 1 1		

<sup>\*</sup> Includes debt service, facilities planning and engineering, construction engineering, and construction contracts.

Eighty-five 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 15, the City plans to invest \$72.8 million in stormwater management services and facilities. Direct monthly user fees will pay for 82 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:

	2004-	2005-	2006-	2007-	2008-
	2005	2006	2007	2008	2009
Single-Family Residential Charge	\$13.30	\$14.26	\$16.82	\$17.33	\$18.55
Residential rate per 1,000 square feet	\$5.54	\$5.94	\$7.01	\$7.22	\$7.73
of impervious area					
Non-residential rate per 1,000 square	\$6.06	\$6.45	\$7.56	\$7.91	\$8.43
feet of impervious area					

At the close of year 14 (FY 2008-2009), City Council increased the monthly stormwater management charge for single-family residences from \$18.55 to \$19.80. The residential rate increased from \$7.43 to \$8.25 per 1,000 square feet of impervious surface per month, and the commercial rate increased from \$8.43 to \$8.86 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 14, this onsite portion was assessed based on \$136.00 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 14, the rates were \$4.27 per linear foot and \$2.23 per vehicle trip. At the end of permit year 14, City Council increased the rates for stormwater system development charges to \$145.00 per 1,000 square feet of impervious area, \$4.50 per linear foot of frontage, and \$2.36 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 14
- Performance measures
- Projected major accomplishments for permit year 15 (FY 09-10)
- 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 14 (FY 08-09)**

#### **Clean Rivers Education Programs**

• Reached 6,412 students (grades K-12) with classroom programs that provide hands-on, interactive science education about stormwater and other environmental issues. Student participation by watershed:

Total:	6,412
Special workshops (all)	82
Willamette River:	3,201
Johnson Creek:	1,221
Fanno/Tryon Creek:	672
Columbia Slough:	1,236

• Involved 6,727 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:

Total:	6,727
Willamette River:	2,328
Johnson Creek:	2,253
Fanno/Tryon Creek:	673
Columbia Slough:	1,473

Of the above total 6,727, 2,627 of the students combined education with natural area restoration service projects. Student participation by watershed:

Columbia Slough (Whitaker Ponds, Big Four Corners)	453
Fanno Creek (Gabriel Park, Pendleton Creek)	418
Johnson Creek (Veterans Creek, Tideman Johnson, Errol Heights,	
Johnson Creek Park, Schweitzer Greenspace, Brookside)	766
Willamette River (Oaks Bottom, Stephens Creek, Forest Park)	990
Total:	2,627

• Co-sponsored delivery of the assembly program: *Living Streams, Stories for Healthy Watersheds*. The assembly was presented to a combination of 4,569 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 8,109 hits.

- Provided jet boat tours of the Willamette River to 768 students in the Johnson Creek, Fanno, and Willamette Watersheds. Canoe trips on the Columbia Slough were offered for 171 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 and field equipment to 12 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 82 participants.
- Trained 20 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 352 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:

Fanno/Tryon Creek: 98 Johnson Creek: 154 Willamette River: 100 **Total** 352

- Presented Tours of Stormwater Solutions to 63 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 788 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: 168
Fanno/Tryon Creek: 28
Johnson Creek: 57
Willamette River: 535
Total: 788

• 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: 246 (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 Forest Park School. Students learned about
  stormwater pollution prevention and their school's sustainable stormwater facilities and
  participated in maintenance activities for their facilities.
- Participated in six community events, with a total of 991 participants. These were the Children's Clean Water Festival, Columbia Slough Regatta, Explorando El Columbia Slough, Sustainable Living Show, Arbor Day, and the City of Portland Native American Month Brown Bag. All events included stormwater pollution prevention messages.
- BES's contract performer performed portions of the storytelling assembly, *Living Streams*, at the Sustainable Living Fair, reaching approximately 400 audience members:

#### **Education Advisory Committee**

• Continued quarterly 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, two Soup on the Slough events, two watershed cycling events, a Great Blue Heron week event, three Wild in the City events, and five neighborhood association picnics or gatherings in which stormwater was a topic of instruction. The City was a co-sponsor of the Columbia Slough Watershed Awards program. The total participation was approximately 3,000 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.
- 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 about 100 individual volunteers and 350 volunteer hours. Volunteers planted native trees and shrubs, removed invasive vegetation, and provided stormwater education.

#### Willamette Watershed

- Co-sponsored and participated in seven community events including: Multnomah Days, Welcome the Rain, PSU Women in the Environment, Parking Day, Naturescaping classes (2), and the Division Street Open House reaching a total of 281 citizens.
- Presented the Stephens Creek Confluence Project to the public at one neighborhood association meeting (with 12 attendees) and the Urban Ecosystem Restoration Conference and a follow up Friday brownbag (>400 attendees). An article about the Stephens Creek confluence project was published in the PGE renewable power spring 2009 newsletter. The restoration site was also included in two conference field trips: Association of State Wetland Managers September 19, 2008 and the National League of Cities (Green Cities Conference and Expo) April 19, 2009. Approximately 60 conference attendees visited the site (30 during each field trip) to learn about the restoration project.
- Sponsored a celebration event highlighting the completion of the Hawthorne Hostel Stormwater Harvesting and Reuse Project. (100 attendees).
- Continued publishing the Stephens Creek Confluence project website.
- Coordinated with stakeholders to complete the SE Clay Green Street Route to the River planning. Attended neighborhood association meetings, business district meetings; and other stakeholder group meetings to discuss the project; held a final open house to release concept designs for the project; held a "Coffee on Clay" event as part of pedalpalooza.

#### Johnson Creek Watershed

- Participated in the Lents Founders Day community event, with a total of 125 participants.
- Continued working with the Johnson Creek Watershed Council and streamside property owners to encourage watershed stewardship.
- Co-sponsored the Johnson Creek Watershed Council's 11<sup>th</sup> annual Johnson Creek Watershed-Wide Restoration Event, where about 350 volunteers worked for a total of 1,400 hours to plant about 4,840 native plants, remove 58 cubic yards of invasive plants, and haul away 17 bags of trash from 10 sites.
- Attended Lents Urban Renewal Advisory Committee and Powellhurst Gilbert Neighborhood Association meetings to inform them about the Johnson Creek watershed restoration program and its projects.
- Gave presentations at the Lents, Pleasant Valley and Powellhurst Gilbert Neighborhood Associations, with 80 people attending, for the East Lents 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 3,040 student visits were made and 70 youth attended weeklong summer camps.
- Participated in two public events, with a total of 50 participants, for the Portland Plan, which
  will update the City's Comprehensive Plan. BES is leading the effort to incorporate
  stormwater management and other natural resource goals and strategies into the plan. BES's
  public involvement objective is to ensure that community members understand and provide
  input on the connections between stormwater management, natural resources and land use
  planning.

#### Fanno and Tryon Creek Watersheds

- Conducted public involvement activities for the Fanno/Tryon Creek Pre-design Project, including communicating with stakeholders and Advisory Committee.
- Supported a part-time coordinator staff position for the Tryon Creek Watershed Council (TCWC). Supported TCWC activities, including:
  - Six "Landscaping for Conservation" workshops for property owners along tributaries.
  - Restoration of 14 sites throughout the watershed (some in coordination with SOLV).
  - Participation in events, including Multnomah Days, Tryon Creek State Park Trillium Festival, Rock Bottom Brewery Endangered Species Brew event, Portland Riverfest, World Water Day, and TCWC Annual Native Plant Sale.
- 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 843 visitors (493 adults, 347 youth) during 942 open hours at the Watershed Resource Center.
  - Supported 16 friends groups engaged in stewardship through 44 meetings, events, and site tours for 373 participants.
  - Provided education programs for 212 children and 154 adults at Family Fun Night, other programs at the SW Community Center, and in the community.
  - Assisted 42 landowners with information, referrals, and six site visits.
  - Tabled at eight community events, reaching 605 participants.
  - Facilitated 31 tool checkouts to organizations for work parties, education events, and cleanups.

#### Citywide

• Partnered with East Multnomah Soil and Water Conservation District, Metro, and many community hosts to offer the Naturescaping Program. The program offers workshops to teach participants to manage their property to use native plants, stop erosion, manage stormwater, and reduce chemical and water use. In FY08-09, 1,277 participants attended workshops, and the program reached over 19,000 people at public events. 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 46 crew leaders led 17 street tree planting events in Portland. The volunteer plantings engaged 1,323 participants who contributed 7,239 volunteer hours. A total of 1,777 street trees and 406 yard trees were planted. In addition to planting trees, volunteers visit each planted tree twice during the summer to make sure homeowners are caring for their trees properly and that the trees are thriving.
- BES supported SOLV's Team Up for Watershed Health to engage the community in riparian area restoration. The program provided volunteer stream restoration projects (erosion reduction, invasive plant control, and native plantings) on private property at 19 sites in Portland. During the fiscal year 2008-2009, the project engaged 519 volunteers from scout groups, schools, volunteer organizations, and businesses and 120 paid crew members.
- 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 of sensitive aquatic resources, youth education, education for dog owners,
  and litter pickup.

Fanno Parks Project Summary			
Restoration			
# Restoration Events	59		
# Volunteers	813		
# Volunteer Hours	2,633.5		
Outreach/Education			
# Outreach Events	1		
# People Reached	~100		

**Willamette Watershed Parks Projects** 

	<u>U</u>		
Restoration			
# Restoration Events	30		
# Volunteers	671		
# Volunteer hours	2,537		
Outreach/Education			
# Outreach/Ed Events	14		
# People Reached	~3,569		

• Under the "Dogs for the Environment" program, Parks & Recreation staff conducted active outreach and created educational materials for dog owners in natural areas. Approximately 3,500 people were reached through six events. Education focused on effects on wildlife, with a new brochure in development to address this message. Two Park rangers dedicated to dogrelated enforcement issued 184 warnings or citations this fiscal year (compared to 35 the

previous year). Partners include Multnomah County Animal Services, Audubon Society of Portland, and Oregon Humane Society.

- BES partnered with AmeriCorps' Northwest Service Academy to sponsor an Americorps
  member to serve as BES's Stormwater Stewardship Coordinator. Coordinated multiple
  events focused on stormwater management and pollution prevention throughout the city's
  watersheds, reaching at least 700 people.
- 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 newly acquired Clatsop Butte. Summer youth crew, consisting of 12 youth, removed ivy and blackberries, watered native plants, built split rail fence, and helped work the Powell Butte prescribed burn with the Fire Bureau.
- Continued mentoring and sponsorship of the development of community/university partners
  with Concordia University and the National University of Vietnam-Ho Chi Minh City and
  their Center for Academic Excellence. Staff from Vietnam and BES are involved in cotraining and model curriculum development for community-based urban ecosystem
  environmental solutions

#### **Community Stewardship Grants Program**

BES's Community Watershed Stewardship Program awarded 17 stewardship grants totaling \$140,553 in FY08-09.

#### 2008-09 CWSP GRANTEES BY WATERSHED

Project Name	Amount	
Willamette Watershed		
Depave – Fargo Gardens	\$	10,000
Linnton Community Center – Stormwater feature	\$	10,000
National College of Natural Medicine - Native Plant Instillation Project	\$	3,000
Urban Greenspaces Institute – Oaks Bottom Mural Project	\$	10,000
Richmond Elementary School – Learning Garden	\$	7,850
Ecoroofs Everywhere – Ecoroof and Education Project	\$	6,940
Vestal Elementary School – Schoolyard Naturescaping Project	\$	10,000
Community Energy Project – Watershed Health Education	\$	5,000
Columbia Slough Watershed	•	-,
Columbia Slough Watershed Council – Eyes on the Slough Program	\$	4,853
N/NE Minority Youth & Young Adults Being Connected to Community –		
Restoration Project	\$	5,100
Oregon Humane Society – Naturescaping and Habitat Restoration Project	\$	10,000
Johnson Creek Watershed		
Kenilworth Presbyterian Church – Stormwater feature	\$	7,810
Lents Springwater – Habitat Restoration Project	\$	10,000
Friends of Tideman Johnson Park – Stewardship Project	\$	10,000
Tryon Creek Watershed	·	-,
Friends of Tryon Creek State Park – Stories of a Watershed Exhibit	\$	10,000
Tryon Creek Watershed Council – Restoration Mentorship Project	\$	10,000
Fanno Creek Watershed		•
PCC Sylvania – Habitat Restoration Project	\$	10,000
TOTAL	\$	140,553

The Community Watershed Stewardship Program also awards gift certificates for native plants to help start or maintain projects beneficial to Portland watersheds. In FY 2008-09, CWSP award 21 mini grants totaling \$6,350.

### CWSP Mini Grants 2008-2009 by Watershed

Watershed	<b>Mini Grants</b>	\$
Columbia Slough	5	\$ 1,300
Fanno Creek	8	\$ 2,700
Johnson Creek	2	\$ 200
Willamette River	5	\$ 1,561
Other (Cedar Creek Subwatershed)	1	\$ 589
Mini Grant Program Total	21	\$ 6,350

- 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 13,144 hits on the grants web page.
  - Mailed CWSP brochures to 1,024 community members.
  - Conducted three grant information and writing workshops in the community, describing the grants program and how to apply, reaching 19 participants.
  - Conducted one permit workshop for grantees, reaching 10 participants.
  - Presented to PSU undergraduate class "Community and the Built Environment" about environmental stewardship and careers, reached 75 students and resulted in two mini grant awards.
  - Strengthened the relationship between PSU undergraduate students and CWSP by providing opportunities for undergraduate students to become involved in stewardship activities.
  - Represented CWSP at the Urban Ecosystem and Conservation Symposium hosted by PSU.
  - Presented about CWSP to PSU President's Umbrella Tour, reaching 12 professionals from the community.
  - Presented a lecture on Stormwater Management Integrated Solutions to a PSU "Women and the Environment" class, reached 21 students.
  - Participated in the Tabor to the River Stormwater Bike Ride, reaching 49 community members.
  - Partnered with AmeriCorps and EnviroCorps volunteers to replant a bioswale with students at Bridlemile Elementary School, reaching 66 students.
  - Held two workshops at the Springboard "Financing the Good" Forum, reaching 16 community members.

#### **Regional Coalition for Clean Rivers and Streams**

- Continued participation in the Regional Coalition for Clean Rivers and Streams, with the following activities:
  - Continued working with a local advertising agency to develop and implement a multivear public awareness campaign.
  - Launched the Coalition's redeveloped website in July 2008. The website features an
    online quiz with questions about pollution prevention from information available on the
    website.
  - As part of the updated and upgraded website, engaged in a significant social marketing
    effort starting in spring 2009, including "blog seeding" (providing information to similar
    content blogs), establishing and using a Twitter account, establishing a Facebook page,
    and posting the Coalition's television ad on YouTube under the username
    CleanRiverTips.
  - Distributed water bill inserts with tips regarding stormwater runoff to 214,000 Portland ratepayer accounts from March-May 2009.

 Maintained a budget of \$72,000 per year 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**

- Included inserts in City water/sewer bills:
  - September/October/November 2008: A bill insert titled "Floodplains, Watersheds, and Clean Rivers" was distributed to 214,000 accounts.
  - March/April/May 2009: A Regional Coalition bill insert with information and tips regarding stormwater runoff was distributed to 214,000 accounts.
- 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 135,000 views during FY08-09, a 35 percent increase over FY 07-08.
- Distributed project informational materials entitled "Stephens Creek Confluence Project,"
   "SW Texas Green Street," and "Oaks Bottom Wildlife Refuge Projects." Produced and
   distributed informational materials entitled "Southwest Subwatershed Improvement
   Strategies," "South Subwatershed Improvement Strategies," and "Tryon Creek Confluence
   Habitat Enhancement Project."
- Distributed a variety of educational materials at community meetings and events.

#### **Watersheds Advisory Committee**

The Watershed Science Advisory Group (WSAG) and the Stormwater Advisory Committee (SAC) merged in FY08/09 and began meeting as the Watersheds Advisory Committee (WSAC) in October 2008. The WSAC includes external stakeholders as well as city and state agency representatives. The committee's charges is to advise the City of Portland Bureau of Environmental Services, the City Commissioner in Charge of Environmental Services, City Council, and other city bureaus, as appropriate, on direction, priorities and concepts for implementing the watershed approach in an integrated and maximized manner across the city. The WSAC also advises on stormwater management in the context of watershed health, with the goal of maximizing and leveraging the contribution of any activity to achievement of multiple city goals and objectives. During FY08/09, the WSAC met bimonthly and discussed implementation of the Portland Watershed Management Plan, development of the Portland Plan, and provided recommendations on prioritizing Grey-to-Green initiative projects.

## **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	21,600
Stewardship Activities/Community Events	28,500
Naturescaping for Clean Rivers	1,277 workshop participants; 19,000
	attending outreach events
Water bill inserts	Distribution to 214,000 accounts
	twice in year
Website visits	Assembly Program Curriculum: 8,109
	Community Stewardship Grants Program:
	13,144
	Sustainable Stormwater Management
	Program: 135,000

#### PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

The PI-1 activities that have proved successful will continue in FY 09/10, 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 Watersheds Advisory Committee, and coordination with other BES and City programs. Specific projected activities include:

#### **Education**

• 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.

<sup>&</sup>lt;sup>1</sup> 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.

## Regional Coalition for Clean Rivers and Streams Awareness Campaign

- Continue to develop and implement the multi-year public awareness campaign.
- Continue to publicize the Coalition's redeveloped website.

#### **Committees**

 Continue quarterly Education Advisory Committee meetings to review and advise on public participation approaches and activities

### **Watersheds Advisory Committee**

• Continue Watersheds Advisory Committee meetings to provide review/comment and policy guidance on Portland Watershed Plan implementation and related stormwater issues.

## **Publications and Signage**

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

## Survey

• Conduct a public awareness survey that includes questions about stormwater management.

#### **Coordination with Other Programs**

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

## PROPOSED BMP REVISIONS

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

## **KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 14 (FY08-09)**

During permit year 14, the City 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 were conducted. (Other related activities were also conducted in FY07-08.)

- The City's Stormwater Advisory Committee (SAC) had the opportunity to review and comment on the draft proposed SWMP in July 2008. The SAC had also provided review and comment on components of the proposed SWMP in the preceding months (February-May 2008).
- A public review and comment period was held from July 1-31, 2008. The City conducted the following activities (some during FY07-08) to notify the general public of opportunities to provide review and comment:
  - 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).

E-mailed to the City's Office of Neighborhood Involvement notification list.

E-mailed to the City's Stormwater Advisory Committee and *Stormwater Management Manual* interested parties lists.

- Placed a public notice in the Oregonian and the Daily Journal of Commerce.
- Activated the PortlandOnline webpage to provide background information about the MS4 permit and SWMP and identify opportunities for public review and comment.
- Provided a central telephone message line 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 SWMP to DEQ, for the purpose of having DEQ notify other interested persons.
- The City received written comments from one member of the public during the public comment period. A summary of these comments was included in the permit submittal package, along with the City's response to them.

#### 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 14 is summarized as follows:

- Provided the opportunity for SAC review and comment on the draft proposed SWMP.
- Held a one-month public review and comment, with prior public notification.
- Maintained the PortlandOnline webpage and central telephone message line.
- Received written comments from one member of the public; summarized the comments and provided the City's response in the permit renewal package.

## PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

• DEQ will provide a public comment and review period for the proposed permit; the dates are not yet known.

#### PROPOSED BMP REVISIONS

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 14 (FY 08-00)**

## Municipal Separate Storm Sewer System Assessment, Cleaning, and Maintenance

- BES made 3,324 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 8,632 inlets. Accomplishments by watershed are provided under Performance Measures, below.
- BES cleaned approximately 70,237 linear feet of ditch and 8,957 linear feet of culvert. Accomplishments by watershed are provided under Performance Measures, below.
- BES inspected all 359 public stormwater management facilities (SMFs) twice to document the condition of each facility and identify needed cleaning and repairs. Cleaned 68 SMFs, repaired 10 SMFs. Cleaning/repairs by watershed are provided under Performance Measures, below.
- BES repaired or constructed 216 inlets, 1,693 linear feet of inlet lead, and 1,016 linear feet of culvert. Repairs/construction by watershed are provided under Performance Measures, below.
- Developed a map of watershed maintenance priority areas to be used in prioritizing facilities for routine preventative maintenance. The map was developed considering criteria for fisheries, water quality, microclimate, and amount of a specific drainage basin that is already manage by stormwater management facilities. These data have lead to designating facilities as low, medium, or high priority for future preventative maintenance work.
- Staff continue to look at piloting new materials and applications directed toward enhancing water quality. In FY08-09, staff began using non-composite recycled plastic lumber when replacing wooden trash racks.

#### **Training**

• The 13 members of the Maintenance Operations Environmental Systems Division attended a three-day Water Environment School at Clackamas Community.

## 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 Fanno Johnson Tryon Willamette Stephens Slough Creek Creek Creek River Creek Total							Total
Inspected/Maintained	59	655	186	225	2,111	88	3,324
Cleaned (Hansen data only)*	569	31	528	8	609	4	1,749

<sup>\*</sup> Information on inlets cleaned was pulled from both Maximo (8,632 inlets) and Hansen (1,749 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)	1,560	15,825	4,375	14,550	33,927	70,237	
Feet of Culvert							
Cleaned							
(linear feet)	333	6,246	90	1,224	920	8,957	

Public Stormwater Management Facility Inspections						
Columbia Fanno/Rock Johnson Tryon Willamette						
	Slough	Creek	Creek	Creek	River	TOTAL
Number Inspected	102	65	63	36	93	359
Note: Each facility was inspected twice.						

Public Stormwater Management Facilities (SMFs) Cleaned/Repaired							
	Columbia Slough	Fanno Creek	Rock Creek	Johnson Creek	Tryon Creek	Willamette River	TOTAL
Surface SMFs*	6/3	1/0	0/0	3/6	0/0	4/1	14/10
Subsurface SMFs**	13/0	5/0	7/0	7/0	12/0	10/0	54/0
All SMFs	19/3	6/0	7/0	10/6	12/0	14/1	68/10

# Percent of all public stormwater management facilities cleaned/repaired: 22 %

- \* Surface facilities are: dry ponds, wet ponds, spill ponds, constructed treatment wetlands, vegetated swales, infiltration basins, and sand filters.
- \*\* Subsurface facilities are: sedimentation structures, canister filters

Repair or Construction of Inlets, Inlet Leads, and Culverts						
	Columbia Fanno* Johnson Tryon Willamette					
	Slough	Creek	Creek	Creek	River	TOTAL
Inlets	13	25	10	7	161	216
Inlet Leads (number of/linear						
feet)	10/153	2/8	8/87	2/94	102/1,351	124/1,693
Culverts (number of/linear feet)	2/52	13/534	0	1/11	2/419	18/1,016

<sup>\*</sup> Fanno Creek Watershed includes Rock Creek

Material Removed During Maintenance <sup>a</sup>				
Watershed	Amount Removed (Tons)			
Columbia Slough	58			
Fanno Creek	586			
Johnson Creek	162			
Tryon Creek	539			
Willamette River	1,257			
Total	2,601			
Total <sup>a</sup> Material primarily from conveyance syste	2,601			

## > Number and type of training/educational sessions and number of participants

• Maintenance Operations Environmental Systems Division attendance at three-day Water Environment School: 13 participants

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

## PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

• Inspect all public stormwater management facilities at least once.

## PROPOSED BMP REVISIONS

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 14 (FY 08-09)**

- 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 hydrocarbonabsorbing 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**

- Developed a street sweeping map covering all City watersheds to prioritize street sweeping routes to balance water quality benefits with available resources.
- Swept approximately 1,504 miles of streets within the City of Portland in FY08-09. Of this citywide total, approximately 303 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.
- Collected approximately 4,050 cubic yards of 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.

#### **Training**

- Five 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 (22 employees) reviewed equipment cleaning operations.

#### PERFORMANCE MEASURES

## > Number and type of training/educational sessions and number of participants

- Pesticides management: 5 PDOT Maintenance Operations employees
- Equipment cleaning operations: 22 PDOT Maintenance Operations employees

<u>Note</u>: 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 1,504 miles of streets were swept within the City of Portland. This represents 50 percent of the 2,985 total street miles in the City. As shown in the following table, 303 miles of streets that drain to the MS4 or to surface waters were swept. This represents 43 percent of the 707 total miles within the MS4 area. (Note: Mileage refers to street miles and does not reflect frequency of sweeping.)

FY08-09 Miles of Street Swept by Watershed and Street Type				
Watershed	Street Type	Sweeping Miles		
Columbia Slough	Arterials*	43		
	Non-arterials	60		
	Subtotal	103		
Fanno Creek	Arterials*	8		
	Non-arterials	41		
	Subtotal	49		
Johnson Creek	Arterials*	6		
	Non-arterials	24		
	Subtotal	30		
Rock Creek	Arterials*	4		
	Non-arterials	14		
	Subtotal	18		
Tryon Creek	Arterials*	5		
	Non-arterials	20		
	Subtotal	25		
Willamette River	Arterials*	41		
	Non-arterials	37		
	Subtotal	78		
	MS4 Area Total	303		
*Arterials include miles swe	pt in the downtown commercial are	a.		

• Major arterials are swept 10 to 11 times a year. All curbed residential streets are swept one to two times a year.

Approximately 4,050 cubic yards of 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 by Watershed <sup>a</sup>				
Location	Miles Swept <sup>b, c</sup>	Material Collected (cubic yards)		
Columbia Slough	103	1,376		
Johnson Creek	30	401		
Fanno Creek	49	655		
Tryon Creek	25	334		
Willamette River	78	1,043		
Rock Creek	18	241		
Totals	303	4,050		

<sup>&</sup>lt;sup>a</sup> Information is for streets that drain to the MS4 or to surface water.

Does not include 3,699 tons of sanding material collected from streets (citywide) following the December 2008 winter storm.

## PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY 09-10)

- 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.
- Reprioritize street sweeping routes to maximize water quality benefits based on the street sweeping priority map developed in FY08-09.

#### PROPOSED BMP REVISIONS

b Includes leaf collection miles.

<sup>&</sup>lt;sup>c</sup> Miles swept are route miles and do not account for frequency of sweeping.

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 14 (FY08-09)**

# **Portland Office of Transportation Maintenance Operations (PDOT Maintenance Operations)**

- Pollution Prevention (P2) teams met once 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. Started using non-composite recycled plastic lumber when replacing wooden trash racks.
  - Parks' Integrated Pest Management Program, including activities being applied at city golf courses.
  - GreenStreets bioswales and other facilities.
- Cleaned all stormwater and water quality facilities in maintenance yards and lots and continued 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 vear.
  - 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.
- Researched the use of new and more efficient steam cleaning equipment for tools.
- Continued modifications of the facility where street sweepers are rinsed to accommodate new sweepers and improve treatment of rinse water. Moved other wash activities to the truck wash rack in Albina Yard where there is an effective system of wash water treatment.

- Monitored the continued use of approved wash facilities at Stanton Yard, Kerby Yard and the Inverness Pump Station.
- Arranged to perform concrete truck wash out at a permitted wash out facility.
- 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 steamcleaning 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.
  - 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
     35 crew members on managing saw slurry with a range of different equipment.

#### 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-yearly 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.
- Compiled and interpreted data and issued a formal report for the three-year Integrated Pest Management (IPM) enhancement program.
- 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.
- Adopted the standard use of special equipment for precise application amounts, timing, and distribution of fertilizer on all five City golf course fairways and greens.
- Continued to examine maintenance activities as part of annual compliance requirements for continued Salmon Safe certification which includes Integrated Pest Management and using 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 used \$154,000 in one-time money to purchase equipment to connect additional parks to the Maxicom irrigation system. PP&R upgraded and connected nine additional parks and now has 55 parks using the Maxicom system. There has been a water cost savings of just over 20 percent by having the systems managed centrally and tied to weather stations. PP&R anticipates connecting several new sites to the Maxicom system this year.

#### 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.
- Efforts to reduce toxics in government operations continue. The City has secured over \$2 million to clean up Portland and Multnomah County's diesel fleet by installing exhaust emission control devices, as well as idle reduction technologies (anticipated completion December 2010). These retrofit projects will reduce diesel particulate matter emissions by 7.5 tons per year, carbon monoxide emissions by 40 tons per year, and hydrocarbon emissions by 8 tons per year.

The City adopted an idle reduction policy for fleet vehicles, as well as environmental sustainability goals related to greenhouse gas emissions, waste prevention and recycling, paper use, water consumption and sustainable stormwater management.

• Starting with the Sustainable Procurement Strategy in 2002 and continuing under the directive of the 2008 Sustainable Procurement Policy, the City employs green purchasing best practices in order to spend public funds on goods and services that minimize negative impacts on human health and the environment. In FY08-09, the Bureau of Purchases launched an employee online resource that provides commodity-specific guidance on identifying and specifying green products and services, such as low-mercury lamps, less-toxic cleaning products, and sustainably harvested lumber. This resource is just one example of the City's ongoing efforts to prevent pollution by buying less toxic, safer, and environmentally sound products and services.

#### PERFORMANCE MEASURES

## > Number and type of training/educational sessions and number of participants

- PDOT Maintenance Operations Pollution Prevention Team training 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 245 employees

<u>Note</u>: Training related to other operations and maintenance activities is identified under OM-1 and OM-2.

# > 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).
- PDOT Maintenance Operations continued modifications of the facility where street sweepers are rinsed to accommodate new sweepers and improve treatment of rinse water; moved other wash activities to the truck wash rack in Albina Yard where there is an effective system of wash water treatment; and arranged to perform concrete truck wash out at a permitted wash out facility.

## PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

## **PDOT Maintenance Operations**

 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.

#### 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.
- 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.
- Complete diesel emission control and idle reduction retrofits on City of Portland and Multnomah County diesel fleets.

#### PROPOSED BMP REVISIONS

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 14 (FY 08-09)**

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

- Inspected, sampled, and administered the permits for 142 industries (and associated tenants) with stormwater discharge to the MS4. Seven 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 94 additional permits for facilities not located in the MS4. Four of these were terminated midway through the fiscal year. 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 383 inspections of permitted and non-permitted facilities during permit year 14. Identified BMPs at these industries to minimize or remove exposure of industrial activities to stormwater. Required nine facilities to apply for a stormwater permit. More detailed information about these inspections is included under Performance Measures, below.
- Collected and analyzed four samples from two 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.)
- Issued four Alternative Discharge Control Mechanisms to non-permitted sites that address concerns regarding potential spills and release of pollutants from industrial activities.
- Prompted 11 sites to remove exposure of industrial activities and other pollutant sources to the extent that the facilities were able to either terminate their permit or qualify for a no exposure certification (NEC).
- 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.

- 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 issued an NEC in lieu of a permit. The program effectively tracks these facilities and 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 42 industries that had an NEC expiring in FY 08/09, eight were either no longer in business or had moved. Two NECs were terminated due to the drainage area being diverted to the combined sewer and one NEC site was incorporated onto an existing 1200-Z permit. The City reissued the NEC to 31 facilities and issued new NECs to another 19 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 08/09					
	Permit Type	Number of Permit	s Managed		
Location	1200Z	1200COLS	TOTALS		
Willamette River	62	NA	62		
Columbia Slough	NA	75	75		
Johnson Creek	3	NA	3		
Fanno Creek	0	NA	0		
Tryon Creek	0	NA	0		
Other (Columbia R.)	2	NA	2		
TOTALS	67	75	142		

# > 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	<b>TOTALS</b>			
Willamette River	67	47	114			
Columbia Slough	81	44	125			
Johnson Creek	3	2	5			
Fanno Creek	0	0	0			
Tryon Creek	0	0	0			
Other (Columbia R.) 2 1 3						
TOTALS	153	94	247			

Table IND-C						
Number of	Number of Industrial Stormwater Inspections for					
Facilities th	at Do Not Discl	harge to the City's N	<b>1S4</b>			
INSPECTION TYPE:	Permitted	Non-Permitted	TOTALS			
Willamette River	34	9	43			
Columbia Slough	55	31	86			
Johnson Creek	5	0	5			
Fanno Creek	1	0	1			
Tryon Creek	0	0	0			
Other (Columbia R.) 2 0 2						
TOTALS	97	40	136			

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.

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	67	5	100	
Columbia Slough	4	78	12	95	
Johnson Creek	0	3	0	100	
Fanno Creek	No	NA			
Tryon Creek	No	NA			
Other (Columbia R.)	0	1	1 0		
TOTALS	4	149	17		

# PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

- 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.
- Update City Code Chapter 17.39 to provide clearer authority regarding discharges to the MS4.
- Revise and update the City's memorandum of agreement with DEQ to reflect new administrative duties required for managing the General Stormwater Discharge Permits.

## PROPOSED BMP REVISIONS

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 14 (FY08-09)**

### **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 14, 35 shops were certified in the City of Portland.
- Began to update the Landscape Ecological Business BMP guide. Made stronger connections
  with other agency partners for review, including Oregon State University, Pollution
  Prevention Resource Center, and Oregon Landscape Contractors Association.
- Used EPA grant funding to purchase spill prevention and containment devices to use as incentives for firms to participate in the Ecological Business Program.
- 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. This ongoing effort was supplemented with EPA grant funding.
- Continued implementing the Eco-logical Business Program for the landscape services sector.
   Certified three full-service, one design, and two installation firms 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. Also attended the annual Oregon Landscape Contractors Association conference to garner more interest from program participants.

#### **BEST Business Center**

• The BEST Business Center assists Portland businesses with resources and information to help them green their operations. The center is run by the Bureau of Planning and Sustainability (formerly Office of Sustainable Development), in partnership with the Portland Water Bureau, Portland Development Commission, Metro, Pacific Power, and Portland General Electric. To date, the center has been contacted by over 260 businesses looking to green their operations.

- The BEST Business Center also administers the annual BEST Awards, which recognize
  Portland's most sustainable businesses. In 2009, 10 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.
- In April 2009, the center launched a new award called Portland Climate Champions to recognize businesses that have taken measurable steps to reduce their greenhouse gas emissions through energy efficiency, renewable power, transportation incentives, water conservation, recycling and waste prevention.

## Columbia South Shore Well Field Wellhead Protection Program

Completed the sixth 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
14 included:

## <u>Technical Assistance to Regulated Businesses:</u>

- Conducted 15 phone consultations.
- Conducted 38 site visits.
- Had two articles in Columbia Corridor Association newsletter.
- Conducted one fire inspector training/site visit.
- Called all regulated businesses to check in with them on program implementation.
- Distributed 24 free spill kits, required signs, secondary containment pallets, and stormdrain covers.
- Made multiple presentations at Columbia Corridor Association (CCA) breakfast forums about the groundwater protection program.
- Maintained the CCA and PortlandOnline webpage on the protection program and requirements.
- Partnered with Zero Waste Alliance to contact a subset of regulated businesses that use halogenated solvents to explore their uses and potential alternatives

#### **Public Outreach**

- Slough School groundwater module: 545 students
- Groundwater 101: 33 participants
- Subs on the Slough: 31 participants
- Cycle the Well Field: 34 participants
- Aquifer Adventure: 500 participants
- Explorando: 400 participants
- Clean Water Festival:150 students
- Metro Hazardous Waste Round-up: 300 participants

 Other Events with Groundwater Content (Regatta, Awards Celebration, Migratory Bird Festival, Slough and Wetlands 101)
 Total participants/contacts: 1,993 (not including technical assistance activities listed above)

## 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			
Eco-logical Business Program				
Businesses certified (within City of Portland)	Total to date since program implemented: Automotive repair and service shops: 35 Landscape services: 12			
Promotional campaign to promote the Eco-logical Business message.	Unknown			
Columbia South Shore Well Field Wellhead Protection Program	15 phone consultations and 38 site visits to regulated businesses			
	Public outreach to 1,993 participants/contacts			
BEST Business Center	<ul> <li>260 phone or email contacts from Portland businesses to date</li> <li>BEST Awards to 10 businesses in 2009</li> <li>Portland Climate Champion award to 1 business in 2009</li> </ul>			

## PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

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
 15 is to have three more auto shops certified and four more landscape services certified in the
 City of Portland.

- Complete the update the Landscape Ecological Service BMP handbook and begin to update the program certification checklist.
- 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

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 14 (FY08-09)**

## **Illicit Discharges**

- BES's Illicit Discharges Elimination Program (IDEP) conducted the following activities during FY 08-09:
  - Conducted 486 outfall inspections
  - Continued revising the priority outfall list; currently track 126 outfalls
  - Identified and eliminated one illicit discharge
  - Continued dry-weather monitoring at all major outfalls during the summer sampling period; inspected/sampled all priority and Portland Harbor outfalls at least three times.
- BES's Industrial Stormwater Management Program continued to address illicit discharges and connections as they were identified during stormwater inspections and as referred by other parties. During FY 08/09, nine illicit discharges were identified; six discharges were corrected, with three pending correction. Enforcement and/or warning letters were issued to all of the responsible parties, and penalties totaling \$3,500 were assessed. The program continues to address prohibited discharges and other non-stormwater discharges to the storm sewer system. Policies and appropriate control measures, if needed, are developed and implemented.

## **Spill Response**

- Nine BES staff serve as duty officers for the BES Spill Response Hotline. Activities in FY 08-09 included:
  - The hotline received a total of approximately 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 384 after-hours complaint calls (citywide). The duty officer responded on-scene to 44 of these after-hours events; this included 24 after-hours events on weekends and 20 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.

- BES issued 38 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 FY08-09, seven 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 08-09, 35 calls were received from towing companies. No enforcement actions were taken.
- The Regional Spill Committee continued its coordination meetings, holding four quarterly meetings during permit year 14. 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.
- The Industrial Stormwater Management Program administered 236 General NPDES Stormwater Permits with requirements to maintain Accidental Spill Prevention Plans. The program evaluates permit compliance of industrial facilities to ensure that best management practices relating to spill prevention and reporting are properly implemented.

• The Industrial Stormwater Management Program issued four Alternative Discharge Control Mechanisms to non-permitted sites that address concerns regarding potential spills from industrial activities.

## **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
  - 384 after-hours complaint calls
  - 2,200 additional daytime information-only calls

*Note:* These numbers are citywide, not for just the MS4.

- > Number of illicit connections discovered; number of illicit connections corrected; amount of materials collected/removed (where appropriate)
  - The Illicit Discharges Elimination Program identified and eliminated one illicit discharge.
  - The Industrial Stormwater Management Program identified nine illicit discharges; six were corrected, with three pending correction.

## PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

- 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.

#### PROPOSED BMP REVISIONS

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

# **KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 14 (FY 08-09)**

- There were 5,018 active private construction permits subject to erosion control inspection (citywide). (See Performance Measures, below, for more detail.)
- The Bureau of Development Services (BDS) conducted 6,069 erosion control-related inspections of private construction sites (citywide). This number includes only approved inspections. (See Performance Measures, below, for more detail.)
- There were 289 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 239 cases were opened and responded to, with 162 cases closed (citywide). (The erosion control hotline was incorporated the Bureau of Development Services' Site Services Complaint Line effective May 2009.)
- 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.

## PERFORMANCE MEASURES

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

Location	Number of Permits			
Columbia River	22			
Columbia Slough	1,098			
Fanno Creek	352			
Johnson Creek	1,036			
Multnomah Channel	13			
Rock Creek (Washington County)	119			
Tryon Creek	223			
Willamette River	2,155			
Total	5,018			

Number of Active Public Construction Projects with Erosion Control Components (Citywide), by Watershed			
Location	Number of Permits		
Columbia Slough	57		
Fanno Creek	14		
Johnson Creek	45		
Tryon Creek	9		
Willamette River	164		
Total	289		

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

- In general, public works permit sites are inspected daily during construction.
- Private property inspections conducted during permit year 14 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	18			
Columbia Slough	1,522			
Fanno Creek	425			
Johnson Creek	1,410			
Multnomah Channel	14			
Rock Creek (Washington	94			
County)				
Tryon Creek	233			
Willamette River	5,014			
Totals	6,069			

#### 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 15 (FY09-10)

- Continue to respond to erosion control complaints received through the Site Services Complaint Line and staff referrals.
- Continue to modify permitting, contracting, and inspection processes for more effective erosion control enforcement, especially for pollutant control measures.
- Conduct a seventh regional awards program to reward outstanding erosion control efforts by builders and contractors.

## PROPOSED BMP REVISIONS

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 14 (FY08-09)**

- Completed the 2008 revision of the Stormwater Management Manual (SWMM) (which took effect October 2008). The revision incorporated the following elements:
  - Clarified the application of the stormwater disposal hierarchy.
  - Included a soil specification for the stormwater facility growing medium.
  - Included typical details and specifications for vegetated facilities in the public right of way.
  - Updated the design specifications for all stormwater management facilities.
  - Was reorganized to improve usability.
  - Included all new forms and submittal guides.
  - Included a new Presumptive Approach Calculator (PAC) that allows more flexibility in sizing vegetated facilities using infiltration testing results.
- Continued to implement the 2008 SWMM. Permitted approximately 3,215 private building permits and 22 public works permits. Also responded to approximately 657 land use cases and early assistance requests, including technical assistance to City staff and the public.
- The Maintenance Inspection Program (MIP) provides technical assistance to property owners on the operation and maintenance (O&M) of private stormwater management facilities. It ensures that property owners follow site-specific, BES-approved O&M Plans. The program also collects information on stormwater management facility deficiencies and corrective actions taken to address deficiencies. The MIP database tracks a total of 4,885 properties, which include 7,927 private stormwater management facilities. Approximately 70 percent of the properties are single-family residential (SFR), the majority of which have a drywell or a soakage trench onsite to manage roof runoff.

#### MIP activities in FY 08-09 included:

- > The program tracked 112 new properties that were subject to the SWMM and recorded new O&M plans. These include 216 stormwater management facilities proposed for construction.
- > New development under the program resulted in over 58 acres of property being treated and/or managed by a stormwater management facility.
- MIP staff inspected 394 properties, which included 1,111 stormwater management facilities. This represents approximately 28 percent of the total facilities that are inspected under the program, which are primarily commercial and industrial sites. Inspections assessed whether or not stormwater management facilities are sufficiently

- operated and maintained. Additionally, pollution prevention best management practices (BMPs) for site activities were evaluated during MIP inspections.
- > Added a new staff position in the program to assist with facility inspections.
- > Mapped MIP data, including MIP properties, facilities, inspections, and O&M plan and facility maintenance deficiencies.
- > Facilitated a workshop on the operation and maintenance of stormwater management facilities for the private sector.

(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 890 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 planned for construction

	Willamette River	Columbia Slough	Johnson Creek	Fanno Creek	Tryon Creek	Other	Total
Constructed Treatment Wetland							0
Detention Pond (wet)		1					1
Detention Pond (dry)							0
Drywell	12	9	22				43
Ecoroof	3			2		1	6
Flow-through Planter Box	26	6	5	9	7	4	57
In-line Detention Facility	3	1					4
Infiltration Basin	4	1	2				7
Infiltration Planter Box	11	6	3				20
Manufactured Facility	7	9			1		17
Oil / Water Separator		1					1
Porous Pavement	3	1	4	1			9
Sand Filter	1	1	1	1	2		6
Sedimentation Manhole	2	1	1				4
Soakage Trench		3					3
Spill Control Manhole	2						2
Stormwater Reuse System		2					2
Swale	13	10	3	2		1	29
Tree	1						1
Vegetated Filter	2	1					3
Unknown				1			1
<b>Total Facilities</b>	90	53	41	16	10	6	216
Total Properties <sup>2</sup>	53	19	24	11	4	3	112
Area Treated (acres) <sup>2</sup>	27.7	24	7.7	0.5	0.8	0.4	58.4

#### Notes

> 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

<sup>1.</sup> 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 2008-2009 reporting year.

<sup>2.</sup> Two properties are double-counted because they lie in multiple watersheds.

A total of 1,111 facility inspections were conducted, representing 28 percent of the total facilities inspected under the program at commercial and industrial sites, as shown below.

MIP Inspections, FY 2008-09							
	Willamette River	Columbia Slough	Johnson Creek	Fanno Creek	Tryon Creek	Other	Total
Facility Inspections	390	376	342			3	1,111
Property Inspections * 132 122 107 1 39							394

# Note

<sup>\*</sup> Roughly 30 properties were inspected more than once, so they are not included in the watershed counts; two properties are double-counted because they lie in multiple watersheds.

Inspection Results, FY 2008-09						
	Inspections	Observed Deficiencies *	Corrections**			
Constructed Treatment Wetland	3	1 (33%)				
Detention Pond (wet)	9	3 (33%)	1			
Detention Pond (dry)						
Drywell	295	19 (6%)	1			
Ecoroof						
Flow-through Planter Box	49	19 (39%)	3			
HazMat Control Structure	1					
In-line Detention Facility	14					
Infiltration Basin	44	5 (11%)	2			
Infiltration Planter Box	10					
Manufactured Facility	132	49 (37%)	17			
Oil / Water Separator	26	4 (15%)	2			
Porous Pavement	8	1 (13%)	1			
Sand Filter	5					
Sedimentation Manhole	210	103 (49%)	14			
Soakage Trench	33	2 (6%)	1			
Spill Control Manhole	20	7 (35%)	3			
Stormwater Reuse System	1					
Swale	224	57 (25%)	34			
Tree	9					
Vegetated Filter	7	3 (43%)				
Totals	1111	<b>277</b> (25%)	79			

#### **Notes**

<sup>\*</sup> Deficiencies are defined as having one or more of the following issues: missing parts, a significant lack of vegetation, or high amounts of accumulated sediment.

<sup>\*\*</sup> Numbers include all corrections made during FY08-09, even if inspected in a previous year.

In addition, 58 O&M plans were found to be deficient in the 2008-2009 reporting year. O&M deficiencies consist of plans and maps that do not accurately reflect the type, number, or location of facilities built. Two of the deficient O&Ms were corrected by recording new O&M plans.

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

	Willamette	Columbia	Johnson	Fanno	Tryon		
Source Control Type	River	Slough	Creek	Creek	Creek	Other	Totals
Site Dewatering &							
Discharges <sup>1</sup>	10	7	0	0	0	2	19
Solid Waste Storage/							
Containers/Compactors <sup>1,2</sup>	381	138	50	8	7	55	639
Material Transfer							
Areas/Loading Docks <sup>1</sup>	26	31	2	0	0	2	61
Fueling <sup>1</sup>	11	5	0	1	0	2	19
Liquid Storage/Tank Farms <sup>1</sup>	20	14	2	1	0	2	39
Vehicle Washing <sup>1</sup>	6	7	1	0	0	1	15
Exterior Bulk Storage <sup>1</sup>	4	7	2	0	0	2	15
Development on/near							
Contaminated Sites	30	18	4	0	0	6	58
Parking - above and below							
grade <sup>1</sup>	15	0	3	1	0	4	23
Water Reclaim & Reuse	2	0	0	0	0	0	2
FY08-09 Totals	505	227	64	11	7	76	890

Alternative SWMM controls may have been used as result of the appeals process.

# PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

- Continue 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.
- As needed, work with the Watersheds Advisory Committee (WSAC) to develop and refine stormwater management policies.
- Continue the Maintenance Inspection Program for private facilities, including:
  - Inspect approximately 300 new MIP properties.
  - Inspect approximately 300 deficient MIP properties.
  - Refine the process for noncompliant referrals for plumbing-related deficiencies.
  - Initiate a pilot program for SFR stormwater facility O&M requirements.
  - Develop a mechanism for enforcement on maintenance-related deficiencies.
  - Update/develop guidance materials and website.

<sup>&</sup>lt;sup>2</sup>Tenants of the same site may have shared source controls. As a result source controls in these categories may be counted more than once.

# PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its 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 14 (FY 08-09)**

- 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 1,230 linear feet of roadside ditches to swales or porous shoulder. (See Performance Measures, below, for more detail.)
- Continued design of stormwater facilities at NE 148<sup>th</sup> Avenue in the Columbia Slough Watershed, which will treat 294 acres of mixed land use (primarily residential).
- Continued design of stormwater facilities at NE 122nd Avenue in the Columbia Slough Watershed, which will treat 2 acres of mixed land use.
- Continued 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 near design completion for the Springwater Wetlands Restoration Project, which will include water quality elements as part of a habitat restoration project.
- Developed 90 percent design for the Errol Creek Confluence Project, which will add wetlands, remove culverts and improve fish access to the cool, consistent flow of Errol Creek.
- Installed a pollution reduction facility at Johnson Lake, a portion of which is publicly owned.
- Completed construction of the Hawthorne Hostel Stormwater Harvesting and Reuse Project, a demonstration project that collects rainwater from the roof to re-use in the hostel's toilets and for landscape irrigation.
- Completed construction of 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.

- Completed pre-design and started design of the Tryon Creek Habitat Enhancement Project. This project will create a floodplain bench along approximately 400 feet of lower Tryon Creek and regrade the floodplain at the confluence of Tryon Creek and the Willamette River to restore hydrologic connectivity. It will install large wood and boulder structures along the banks to improve aquatic habitat diversity and complexity and will revegetate with natives to improve near channel floodplain and riparian habitat.
- Continued pre-design on the Oaks Bottom Habitat Enhancement Project to 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 Phase II of the Burlingame Sewer Repair Project. This project protects the sewer line, stabilizes the stream bed, and enhances stream complexity.
- Completed 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. Fourteen projects (most focusing on stormwater and water quality improvement as a major element/objective) are now funded for design and construction in the next 5 to 10 years. A number of related green street projects (Multnomah village curb- extension projects) were constructed or are planned for construction in FY 09-10. Additionally, about 10 stormwater management sites were added to the Fanno force-main project; these are currently in the design phase and will be constructed in 2010 and 2011.
- Constructed the Foley/Balmer stream enhancement and slope stabilization project in the Tryon Creek Watershed.
- Conducted ecoroof seminars to give Portland residents and professionals enough information to build ecoroofs, with 146 attendees. Topics included structure, design, waterproof membranes, plants, soil, irrigation, permitting, and maintenance.
- Conducted an Ecoroof Vendors Fair to connect vendors with potential projects and each
  other, create awareness of ecoroofs as a cost-effective tool for sustainable stormwater
  management, and promote the Ecoroof Incentive. Thirty-six local and regional vendors
  participated in the event, including architects, landscape architects, soil and plant providers,
  roofers, contractors and non-profits. The event also included case study presentations of
  residential ecoroofs by seven Portland homeowners. Over 350 people attended the event.
- 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 152 inspections and follow-up inspections of businesses in the wellhead protection. Thirty-one wellhead protection violations were identified, most related to containment, labeling, and reporting requirements.
- Added updated features to the database to better track use of hazardous materials.
- Promoted hazardous waste reduction and non-hazardous alternatives, focusing on the reduction or elimination of halogenated solvents.
- Constructed a green street facility at SW 4<sup>th</sup> & College that manages 16,900 square feet of street runoff. The runoff used to flow directly to a storm sewer and into the Willamette River.
- Constructed two green street curb extensions on NW 35<sup>th</sup> south of Yeon that manage 9,000 square feet of street runoff. Street runoff from this part of the NW Industrial Area was flowing untreated into the Willamette River.
- Constructed a green street facility on SW Marigold to provide water quality treatment for runoff from an 8.72-acre (380,000-square-foot) catchment. The runoff used to flow directly to a storm sewer and into Tryon Creek.
- Constructed a curb extension at SW Virginia and Florida that manages stormwater runoff from 3,500 square feet of street. The runoff used to flow directly to a storm sewer and into the Willamette River.
- Constructed two green street curb extensions in Multnomah Village: one at SW Troy & 35<sup>th</sup> that manages 9,300 square feet of street runoff and one at SW 32<sup>nd</sup> & Capitol Highway that manages 20,000 square feet. These projects are part of an ongoing program to manage stormwater in Multnomah Village. The runoff used to flow directly to a storm sewer and into Tryon Creek.
- The Sustainable Stormwater Management Program fielded public requests for information and technical assistance and provided technical assistance to a variety of projects:
  - Received over 50 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 50 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.
  - Hosted a free, two-day workshop on ecoroof design and implementation.
  - Updated the home page for the Sustainable Stormwater Management Program website.
     The website received over 135,000 hits, a 35 percent increase over last fiscal year.
  - Developed public outreach fact sheets and tools, including an ecoroof handbook, ecoroof
    incentive materials, updated stormwater cycling map and stormwater monitoring report,
    and a green street maintenance training workshop for New Columbia residents.

- The Sustainable Stormwater Management Program completed an ecoroof design and implementation guidebook, seminar workshop and presentation, and professional referral list to support the Ecoroof Program and assist designers, architects, and engineers in the selection, design, and implementation of ecoroofs.
- The City continued to implement the Grey to Green initiative, with 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 design documents for more than 70 green streets in the Brooklyn Basin.
     Continued conceptual design and planning to implement green streets along SE Clay St. while improving safety for bicyclists.
  - Selected and implemented green street projects for "1% for Green" funding.
  - BES and the Bureau of Planning and Sustainability (BPS) 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. Three 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 50 people attending each class. BPS also delivered 61 presentations to a variety of building-related organizations, including minority, women, and emerging small businesses (MWESB). Audience numbers ranged from 3 to 285 people per event, reaching a total of approximately 2,300 people.
- BPS 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. At each fair, over 75 workshops and exhibits provide residents with selfhelp 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 14, 2,285 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

and inclusion of the general program brochure in each "move in" packet sent to new utility account ratepayers.

- Provided educational and outreach opportunities regarding stormwater retrofits and registration information, including:
  - 10 stormwater management workshops on retrofits of existing development for residential, commercial, industrial and multifamily properties, attended by 36 ratepayers
  - Attendance at 27 public events and speaking opportunities, making contact with approximately 1,105 people.
  - Management of the Clean River Rewards website to provide information and technical assistance. The website registered approximately 81,000 external hits during the FY 08/09 fiscal year.
  - Provided stormwater retrofit and registration assistance to 260 technical assistance cases.
  - Verified stormwater discount registration at 733 active utility accounts, providing stormwater technical assistance on maintenance and stormwater facility improvements.

At the end of the fiscal year, a total of 32,997 utility ratepayers with active accounts have registered for stormwater discounts:

- 31,563 single-family residential ratepayers account for a total of 70,269,767 square feet of impervious area managed for stormwater.
- 1,434 multifamily, commercial, and industrial ratepayers account for a total of 29,477,293 square feet of impervious area managed for stormwater.
- Continued work on developing a new code policy package to clarify Title 17 code sections for the following stormwater management and watershed health issues:
  - Drainage improvement construction
  - Green street maintenance
  - Enforcement provisions for unauthorized modifications of City drainage infrastructure

#### PERFORMANCE MEASURES

- > Location (watershed), number, and type of projects implemented <sup>2</sup>
- > Type and amount of area managed by structural facilities
- Ditches to swales retrofits: See table below.

Ditches to Swales Retrofits						
Watershed	Linear Feet					
Fanno Creek	3900-4400 SW Garden Home	470				
	Rd.					
Fanno Creek	8919 SW Capitol Highway	30				
Subtotal		500				
Di	tches to Porous Shoulder Retro	fits				
Watershed	Location	Linear Feet				
Fanno Creek	3900-4400 SW Garden Home	630				
	Rd.					
Fanno Creek	6030 SW Taylors Ferry Rd.	100				
Subtotal		730				
Total		1,230				

- Installed the NE 92<sup>nd</sup> Street pollution reduction facility at Johnson Lake. The facility treats 36 acres of street and right-of-way and 44.5 acres of private runoff. It also provides hazardous spill containment in the groundwater protection area.
- Completed construction of the Hawthorne Hostel Stormwater Harvesting and Reuse Project, a demonstration project that collects rainwater from the roof to re-use in the hostel's toilets and for landscape irrigation.
- Completed construction of 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.
- Constructed the Foley/Balmer stream enhancement and slope stabilization project in the Tryon Creek Watershed.
- Constructed a green street facility at SW 4<sup>th</sup> & College that manages 16,900 square feet of street runoff. The runoff used to flow directly to a storm sewer and into the Willamette River.

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<sup>&</sup>lt;sup>2</sup> Performance measures for public involvement aspects of activities are under PI-1.

- Constructed two green street curb extensions on NW 35<sup>th</sup> south of Yeon that manage 9,000 square feet of street runoff. Street runoff from this part of the NW Industrial Area was flowing untreated into the Willamette River.
- Constructed a green street facility on SW Marigold to provide water quality treatment for runoff from an 8.72-acre (380,000-square-foot) catchment. The runoff used to flow directly to a storm sewer and into Tryon Creek.
- Constructed a curb extension at SW Virginia and Florida that manages stormwater runoff from 3,500 square feet of street. The runoff used to flow directly to a storm sewer and into the Willamette River.
- Constructed two green street curb extensions in Multnomah Village: one at SW Troy & 35<sup>th</sup> that manages 9,300 square feet of street runoff and one at SW 32<sup>nd</sup> & Capitol Highway that manages 20,000 square feet. These projects are part of an ongoing program to manage stormwater in Multnomah Village. The runoff used to flow directly to a storm sewer and into Tryon Creek.
- Clean River Rewards registrations (citywide)
  - 31,563 single-family residential ratepayers account for a total of 70,269,767 square feet of impervious area managed for stormwater.
  - 1,434 multifamily, commercial, and industrial ratepayers account for a total of 29,477,293 square feet of impervious area managed for stormwater.

# PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY09-10)

- 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, green street in the Gateway urban renewal area, and sustainable stormwater techniques for the PCC satellite campus in the Eastside industrial area.
- Develop green street maintenance guidance for volunteers.
- Complete a multi-block green street concept plan for SW Montgomery Street, and implement two blocks from the concept plan.
- Continue the ecoroof seminar series, and hold the second annual Ecoroof Vendors Fair.
- Construct three green street projects in the Multnomah Village area that drains to the Tryon Creek watershed.
- Construct two curb extensions on N Central Ave just south of St Johns Avenue to manage 18,800 square feet of street runoff. The runoff currently flows into a storm sewer and into the Columbia Slough.

- Construct two swales on N Channel Ave north of Ballast to manage 7,800 square feet of street runoff. The runoff currently flows into a storm sewer and into the Willamette River.
- Complete 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
- 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 education and outreach for ecoroof design and
  implementation.
- Continue to provide oversight to ensure compliance with Columbia South Shore Well Field Wellhead Protection Program requirements.
- Continue to implement Clean River Rewards activities.
- Identify future CIP and grant-funded retrofit projects through the watershed and sustainable stormwater programs.
- Continue to monitor and verify Green Investment Fund projects. Continue to offer ReThink classes on green building and sustainable site development. Continue to offer Fix-It Fairs and other environmental education programs to the public.
- Complete passage of Title 17 code modifications to protect City drainage improvements.

# PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its 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 14 (FY 08-09)**

- 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. An inventory update is also underway for the portion of the Columbia Slough Watershed including and surrounding Portland International Airport. 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 program as part of area specific projects such as the River Plan for the Willamette Corridor, the Airport Futures Project, and Plans for East and West Hayden Island. The inventory information will also inform an update to the City's Buildable Lands Inventory, the Portland Plan/Comprehensive Plan update, priority-setting for land acquisition, restoration, and public education activities; and advancing the City's compliance with regional, state, and federal regulations. The Bureau of Planning and Sustainability expects to seek endorsement in winter 2009-10 of the updated inventory methodology for use in long-range planning purposes and to inform future program updates.
- Citywide Tree Policy Review and Regulatory Improvement Project staff completed an extensive community stakeholder process to explore key issues and potential solutions. Project staff synthesized the potential solutions into concepts that were presented in various public forums, culminating in a work session with the Portland Planning Commission. Key proposals include structural and content related revisions to city codes, administrative rules, and procedures. The proposals are intended to clarify and improve the cohesiveness, efficiency, and effectiveness of the City's tree regulations. The proposals are also intended to help improve the quantity and quality of the city's trees to support urban forest management, watershed health, and other goals and compliance efforts. The overall proposal, with draft code language, will be released and evaluated through the City's public hearings process in fall/winter 2009/10.
- Began a research project to evaluate City responsibilities if the City were to assume maintenance of trees within public right-of-way.
- 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). The River Plan / North Reach makes recommendations to achieve watershed health objectives for the North Reach, including applying additional natural resource protections, identifying potential natural resource restoration sites, and developing a mitigation bank. The plan was endorsed by the Planning Commission in June of 2009 and will be forwarded to City Council in the fall of 2009.

- 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 fourth workplan (RICAP 4). This package included several changes to support watershed health and onsite stormwater management, including:
  - Amending how lot width is measured to ensure that lot has adequate space for a house.
     This may help with onsite stormwater management by creating lots of a more regular shape.
  - For land divisions, requiring flag lots to share driveway access where feasible to limit impervious surfaces; also limiting building coverage on flag lots.
  - For land divisions, providing staff with more discretion to require private alleys to be public and serve adjoining lots to remove duplicative private infrastructure.
  - Allowing residential driveways to be gravel if they are accessed from a non-improved alley. This should help limit impervious surfaces.
  - Requiring greater tree protection measures for trees proposed for preservation during a land division.

During FY 08-09, the Planning Commission approved the workplan for RICAP 5. RICAP 5 includes several items that may help watershed health, including a package of "green" amendments to encourage eco roofs, solar and wind systems, and water collection systems.

- The Portland Plan is being developed as an update to the City's 1980 Comprehensive Plan and 1988 Central City Plan. It will be an inclusive, citywide guide to the physical, economic, social, cultural, and environmental development of Portland over the next 30 years.
- 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 190 acres of new projects to be planted in future years and is currently managing 1,959 project acres on both public and private property.

The following actions were taken under the Watershed Revegetation Program:

# Willamette River

- Planted 15,146 plants on 7,000 linear feet of riverbank and 101 acres. This included 4,625 deciduous trees, 1,131 coniferous trees, and 9,390 shrubs.

#### Columbia Slough

- Planted 3,440 plants on 19 acres. This included 828 deciduous trees, 157 coniferous trees, and 2,455 shrubs.

# Johnson Creek

- Planted 6,922 plants on 500 linear feet of streambank and 27 acres. This included 1,116 deciduous trees, 125 coniferous trees, and 5,681 shrubs.

# Tryon Creek

- Planted 7,323 plants on 1,780 linear feet of streambank and 8 acres. This included 1,245 deciduous trees, 1,164 coniferous trees, and 4,914 shrubs.

#### Fanno Creek

- Initiated management of 10 new acres.

# **Stormwater Management Facilities**

- Planted 4,832 plants on 15 acres. This included 165 deciduous trees, 225 coniferous trees, and 4,442 shrubs.

# Other

- Planted 3,100 plants on 1,720 linear feet of streambank and 10 acres. This included 300 deciduous trees, 200 coniferous trees, and 2,600 shrubs.
- BES supported SOLV's Team Up for Watershed Health to engage the community in riparian area restoration. The program provided volunteer stream restoration projects (erosion reduction, invasive plant control, and native plantings) on private property at 19 sites in Portland. FY 08-09 activities included:

# Willamette River Watershed

 Planted 240 native plants, removed 71,825 pounds of invasive vegetation, and maintained plantings on three sites

# Johnson Creek Watershed

 Removed 3,800 pounds of invasive vegetation, and maintained native plantings on two sites.

# Fanno Creek Watershed

 Planted 370 native plants, and removed 5,570 pounds of invasive vegetation on two sites.

# Columbia Slough Watershed

 Planted 376 native plants, and removed 2,630 pounds of invasive vegetation on one site.

# Tryon Creek Watershed

- Planted 2,665 native plants, removed 39,065 pounds of invasive vegetation, removed litter, and monitored and maintained vegetation
- Under BES's Community Stewardship Grants Program, awarded 17 stewardship grants totaling \$140,553 for projects that included planting native vegetation. (See PI-1 for project names.) The grants program also awarded 21 mini-grants totaling \$6,350 in fiscal year

2008-2009. 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 partnered with AmeriCorps' Northwest Service Academy to sponsor an Americorps member to serve as BES's Stormwater Stewardship Coordinator. Coordinated multiple events focused on stormwater management and pollution prevention, including events where volunteers planted approximately 1,650 plants.
- In the City Nature East Zone (natural resources), Portland Parks & Recreation worked with
  volunteers to conduct extensive weed removal and native plantings. 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 newly acquired Clatsop Butte.
- 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 of sensitive aquatic resources, education for dog owners, and litter pickup.

Fanno Parks Project Summary				
Restoration				
# Restoration Events 59				
# Plants 4,027				
Length of fence maintained	~350 ft			

**Willamette Watershed Parks Projects** 

Restoration					
# Restoration Events	30				
# Plants planted	4,608				
Length of fence built	~1,977 ft				
Area of Invasive Removal	80,000 sq ft.				

- Co-sponsored the Johnson Creek Watershed Council's 11<sup>th</sup> annual Johnson Creek Watershed-Wide Restoration Event, where about 350 volunteers worked for a total of 1,400 hours to plant about 4,840 native plants, remove 58 cubic yards of invasive plants, and hauled away 17 bags of trash from 10 sites.
- The Johnson Creek Willing Seller Program acquired approximately 5.8 acres of floodplain property.
- Completed 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. Began work on the Riverview and Palatine subwatersheds.

- Partnered with Friends of Trees to support volunteer plantings. A total of 1,777 street trees and 406 yard trees were planted. In addition to planting trees, volunteers visit each planted tree twice during the summer to make sure homeowners are caring for their trees properly and that the trees are thriving.
- The Bureau of Parks & Recreation's Urban Forest Action Plan (UFAP), which was accepted by City Council in March 2007, facilitates implementation of the 2004 Urban Forestry Management Plan. An interbureau team meets quarterly to produce an annual UFAP Implementation Update, which is presented to City Council by the Urban Forestry Commission. The three goals of the UFAP are linked to desired outcomes, and performance measures are being developed for each outcome.
- City Nature Urban Forestry continued implementing the Neighborhood Tree Steward Program, which focuses on urban forestry education, Portland tree ordinances, and promotion of proper tree care and planting.

### PERFORMANCE MEASURES

> Number of trees and shrubs planted and location (by watershed).<sup>3</sup>

Watershed Revegetation Program Number of Trees and Shrubs Planted in FY08/09						
	Trees	Shrubs	TOTALS			
Willamette River	5,756	9,390	15,146			
Columbia Slough	985	2,455	3,440			
Johnson Creek	1,241	5,681	6,922			
Fanno Creek/ Tryon Creek	2,409	4,914	7,323			
Location not Specified						
	500	2,600	3,100			
TOTALS	10,891	25,040	35,931			

# **Parks Projects:**

• Fanno Creek Watershed: 4,027 native plants

• Willamette River Watershed: 4,608 native plants

# **City Support of Other Programs:**

• SOLV:

- Willamette River Watershed: 240 native plants

- Fanno Creek Watershed: 370 native plants

- Columbia Slough Watershed: 376 native plants

- Tryon Creek Watershed: 2,665 native plants

<sup>&</sup>lt;sup>3</sup> Performance measures for public involvement aspects of activities are under PI-1.

- Johnson Creek Watershed Council: 4,840 native plants
- Friends of Trees: 1,777 street trees; 406 yard trees (citywide)

# PROJECTED MAJOR ACCOMPLISHMENTS FOR PERMIT YEAR 15 (FY 09-10)

- Develop and submit for adoption a proposal for baseline stream and wetland setback standards to protect unprotected water bodies. This action will advance the City's watershed health goals and advance the City's compliance with Metro Title 13 Nature in Neighborhoods, TMDL requirements, etc.
- Seek City Council endorsement in 2010 of the updated natural resource inventory methodology for use in long-range planning purposes and to inform future program updates.
- Complete Citywide Tree Policy Review and Regulatory Improvement Project to clarify and improve the City's tree regulations and to support Urban Forestry canopy targets and other objectives, watershed health goals, and other city goals. Initiate development of Tree Technical Manual.
- Forward revisions to the existing Greenway Program for the North Reach of the Willamette River to City Council, and begin work on the program update for the Central and South reaches.
- Seek City Council approval of the RICAP 5 package, including the package of "green" amendments, by November 2009, with implementation in December 2009.
- Begin work on planning process for the West Hayden Island area to attempt to balance the existing environmental health of the island with potential economic growth of Port facilities.
- 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.
- Continue watershed program plantings and purchases.

#### PROPOSED BMP REVISIONS

As part of its September 2, 2008 permit renewal submittal, the City reviewed and revised its 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.

# **KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 14 (FY 08-09)**

- Coordinated with numerous other City bureaus and jurisdictions to continue implementation of the Stormwater Management Plan (as reported under the individual BMPs).
- Met regularly 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 15 (FY09-10)

• 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 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.

- 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).
- Conducted the third year of macroinvertebrate monitoring in Fanno Creek and prepared preliminary statistical analyses of the findings.
- Initiated planning for macroinvertebrate monitoring in Johnson Creek to be conducted in August 2009.
- Initiated planning for probabilistic instream monitoring program that includes metrics for four major watershed health goals, including hydrology, water quality, aquatic habitat, and biological communities. This monitoring plan is scheduled to be implemented in FY2010-11.
- Conducted a pesticide monitoring pilot study in Johnson Creek.
- Conducted water quantity studies (infiltration, volume reduction, peak flow reduction) at infiltration facilities throughout the city.
- Conducted water quality monitoring (facility effluent) at two ecoroofs.
- 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 and compared results to temporal trend analyses conducted in 2008.
- Prepared the annual Monitoring Compliance Report. (The monitoring report follows BMP MON-2, below.)

<u>Note:</u> 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 15 (FY 09-10)

- 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.
- Implement macroinvertebrate monitoring in Johnson Creek, in partnership with the Johnson Creek Interjurisdictional Committee.
- Conducted a fourth year of macroinvertebrate monitoring in Fanno Creek.
- Continue planning for a probabilistic instream monitoring program that includes metrics for four major watershed health goals, including hydrology, water quality, aquatic habitat, and biological communities.
- 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.

# 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.

# **KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 14 (FY 08-09)**

- Continued to report on performance measures for each BMP. This Annual Compliance Report is the fourth 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 15 (FY09-10)

- 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 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)

<u>Note:</u> 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 fiscal year (FY) 2008-09 (permit year) 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 best support the second-term permit conditions. The minimum monitoring requirements are provided 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 08-09. 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. An update of the 2000 and 2001 water quality trending reports was prepared and submitted to DEQ in September 2008 as part of the MS4 permit renewal application submittal. In this annual report, these 2008 in-stream trend analyses are compared to 2009, since a substantial number of additional data points became available in most streams.

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 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 05/06), semi-volatile organic compounds and PCBs were added to the analyte list. PCB analysis was dropped in FY 07/08 because of the lack of detection at the achievable practical quantitation limits.

The Portland Harbor Program initiated an outfall monitoring program in 2007 that continued through 2008. The report discussing these sampling events will be sent to DEQ by December 2009. The objective of that report is to present the results of an outfall basin data analysis conducted to identify City outfall basins where DEQ and the City should exercise their respective authorities to implement additional source investigations and/or controls.

# **Results**

Three storm events, which occurred in November 2008, February 2009, and March 2009, 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)
11/20/08	0	0	0	0.59	0.46
2/23/09	0	0	0	0.44	0.43
3/14-15/09	0.07	0.07	0.04	1.09	0.87

Concentrations of many analytes, mainly TSS and total metals, from the February 23, 2009 storm event were substantially above the long-term averages. Little or no difference from the long-term averages was found for dissolved metals or dissolved nutrients.

The PAH concentrations detected in these three storm events were the same as in previous sampling events. Many of the highest PAH concentrations occurred in the February 23, 2009 storm event, indicating that PAHs may be associated with TSS.

These high concentrations appear to be related to long antecedent dry periods and not the amount or intensity of the rainfall. It is likely that long antecedent dry periods allow sediment to accumulate on impervious surfaces. These sediments and attached metals are then washed off by even moderate storm events.

#### 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 (outfalls that showed a discharge in the past) are monitored up to two more times during the summer period. 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**. Over 1,680 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 discharges are from groundwater infiltrating into stormwater pipes and are not of concern. This permit year, the number of discharges of potential concern was very small. The two follow-up investigations initiated did not result in the identification of a source.

Illicit Discharge Monitoring – Summary of Activities

Sampling	Sampling	Follow-up Investigations
Date	Locations	
July 2008	126 – Total; 2 – Columbia River 75 – Columbia Slough; 40 – Willamette River; 9 – Johnson Creek 70 – Total;	21 had discharges; no follow-up upstream investigations.
August 2008	32 – Columbia Slough; 37 – Willamette River; 1 – Johnson Creek	21 had discharges; no follow-up upstream investigations.
September 2008	70 – Total; 32 – Columbia Slough; 37 – Willamette River; 1 – Johnson Creek	<ul> <li>23 had discharges; 2 follow-up upstream investigations.</li> <li>Outfall 8 (located @ SW Harbor Way &amp; Clay St – Willamette River) – On September 10, 2008, this outfall tested positive for E. coli (&gt;24,000 CFU/100mL). A follow-up investigation showed that the source was no longer present.</li> <li>Outfall 22B (located @ 7200 NW Front Ave – Willamette River) – On September 24, 2008, this outfall tested positive for high pH (9.3). An upstream investigation was conducted. The pH returned to neutral within two upstream manholes of the outfall. A drive-through of the drainage basin found no possible source of the discharge.</li> </ul>
June 2009	126 – Total; 2 – Columbia River; 75 – Columbia Slough; 40 – Willamette River; 9 – Johnson Creek	<ul> <li>43 had discharges; 3 follow-up upstream investigations</li> <li>Outfall 8 (located @ SW Harbor Way &amp; Clay St – Willamette River) – On September 10, 2008, this outfall tested positive for E. coli (&gt;24,000 CFU/100mL). A follow-up investigation showed that the source was no longer present.</li> <li>Outfall 22B (Willamette River at 7200 NW Front Avenue) On June 26, 2009, water emerging from this outfall had an elevated pH of 9.4. An upstream investigation was conducted. The pH returned to neutral between the fourth and fifth upstream manhole from the outfall.</li> <li>Outfall 45 (Willamette River at N Essex Avenue) On June 17, 2009, water was observed flowing down N. Essex Avenue and into a catch basin that connects to the 27-inch outfall pipe discharging into the Willamette River. The water originated from a hose extending from the side door of NW Copper Works, located at 1303 N. River Street. The general manager stated that the water was City tap water used to hydrostatically test pressure vessels. He was given a Violation/Warning Notice, and the issue was referred to the Stormwater Permit Manager for follow-up. NW Copper Works has illicitly discharged water to the storm system at least three times during the past six years. They are currently in the process of obtaining a Batch Discharge Authorization.</li> </ul>

# 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. The ditch-to-swale conversion test study concluded in FY07-08, and the results of a simple statistical analysis were provided in that year's monitoring report.

#### **Results**

No new results are available.

#### **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 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 indicated 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**

No new results are available.

# TASK 3: STORMWATER MANAGEMENT FACILITY (SMF) MONITORING

# STORMWATER QUANTITY, QUALITY, AND SOIL 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. Monitoring of ecoroofs is continuing at various locations.

# **Result—Summary**

The following table summarizes all low-impact development (LID) facilities that have been monitored to date. Facilities that were monitored during FY 08-09 for parameters other than flow are then discussed.

Summary - Facilities Monitored through June 2009 (Cumulative)

Summary - Facilit	ies monitoret	i iii ougn	June 2007	`	Monitoring 1		
	Facility	Age	Infiltration	Flow	Flow	Soil	WQ
Facility	Type	(years)	Testing	Testing	Monitoring	Sampling	Monitoring
Hamilton		10			✓		✓
Apartments	- a						
Portland Building	Ecoroofs	3			✓		✓
Multnomah County Bldg.		6			✓		
NE Siskiyou Green Street		6	✓	✓	✓	✓	
SE Ankeny Green Street		5	✓	✓			
People's Co-op (SE 21st & Tibbetts)	Curb	3					
NE Fremont &131st	Extensions	4	<b>√</b>	<b>√</b>			
NE Sandy & Davis		1	, , , , , , , , , , , , , , , , , , ,	<b>√</b>			
NE Sandy & 21 <sup>st</sup>		1		<b>√</b>			
N Willamette &				<b>√</b>			
Denver		1					
SW 12 <sup>th</sup> Green	Street	4	<b>√</b>	✓		<b>√</b>	
Street	Planters		<b>Y</b>				
New Seasons	Flainters	5				✓	
Glencoe Rain		6	✓	✓	✓	✓	
Garden							
Glencoe Parking Lot Swale		7				✓	
Mt. Tabor Middle School Rain Garden		2	✓	✓			
OMSI Parking Lot	Vegetated	17	✓			✓	
ONRC	Infiltration	7	✓				
St. Andrews Parking	Basins and	(	<b>√</b>				
Lot	Swales	6	•				
SW Community Center		14				✓	
Tryon Headwaters Rain Garden		2	✓	✓			
Walnut Park Police Precinct		15				✓	
George Middle					,		
School	T-1	4			✓		
Oregon Zoo Parking	Flow-	2		✓			<b>√</b>
Lot	through Planters/	3		<b>Y</b>			Y
BES Water	Swales	5			✓		
Pollution Ctrl Lab							
ReBuilding Center	771	4		✓			✓
SE Alder & 41 <sup>st</sup>	Flow Restrictors	5		✓	✓		

# **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

	Units	Portland Building Mean of 6	Hamilton West Roof Mean of 17
Parameter	Cints	samples	samples
Dissolved Copper	μg/L	16.6	11.9
Dissolved Lead	μg/L	0.97	0.11
Dissolved Zinc	μg/L	21.6	14.8
Total Dissolved Solids	mg/L	197	121.4
Nitrate-N	mg/L	0.80	0.24
Total Phosphorus	mg/L	0.90	0.49
Ortho Phosphate	mg/L	0.80	0.39

Two storm events were sampled at the Portland Building ecoroof outlet and two on the Hamilton west roof. No events were sampled on the Hamilton east roof during FY 08-09.

The ecoroof on the Portland Building was installed in 2006, and effluent has been sampled six 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 it was installed. Concentrations of all analytes this year were below the previously detected levels and appear to be on a downward trend.

For the Hamilton west roof, all dissolved metals, as well as phosphorus, were at the lower end or below the range previously observed and also continue to be on a long-term downward trend. Total phosphorus concentrations are still above levels that would be in line with the TMDLs in the Columbia Slough and the Tualatin River. However, if the downward trend continues, the concentrations are expected to be below TMDL levels for both streams.

# 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.

No water quality samples were collected in FY 08-09.

# Results—Soil Quality Monitoring

No new soil samples from ecoroofs, green streets, rain gardens, or swales were collected in FY 08-09. Typically, soil sampling events will occur 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 for a given facility, an initial data comparison will be conducted to evaluate if there is a 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 three years ago and includes monitoring by high school students in Johnson Creek, a sampling "blitz" by the Johnson Creek Interjurisdictional Committee in Johnson Creek, and a five-year monitoring program in Fanno and Tryon Creeks. Results of this expanding monitoring program will be discussed in the next annual report.

Comprehensive Ambient Sampling – Summary

Comprenensive Times	1 0	Monitoring	Water Body-Specific
<b>Surface Water Body</b>	No. of Locations <sup>1</sup>	Frequency 1	Analytes <sup>2</sup>
Balch Creek <sup>3</sup>	4	weekly - quarterly	As, Ni, BOD <sub>5</sub> , ammonia, ortho-P
Columbia Slough <sup>4</sup>	9	bi-monthly	Ni, Hg, Chlorophyll a, ammonia, ortho-P, TKN
Fanno Creek	8	monthly to quarterly	Ag, As, BOD <sub>5</sub> , Cr, ortho- P, Chlorophyll a,
Johnson Creek <sup>4</sup>	12	monthly	Heavy metals, ammonia, ortho-P, herbicides, BOD <sub>5</sub>
Tryon Creek	3	monthly	Ni, 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)

<sup>&</sup>lt;sup>1</sup> 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.

<sup>&</sup>lt;sup>2</sup> Analytes common to all surface water bodies are shown in Table MON-3 of the SWMP and Table B-2 of the permit.

<sup>&</sup>lt;sup>3</sup> 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.

<sup>&</sup>lt;sup>4</sup> Some sampling locations are outside the City of Portland.

# Results of Comprehensive Ambient Monitoring during FY 08-09

Attainment of Selected Important Water Quality Standards/Criteria

	Attainment of Water Quality Standards or Guidance Values <sup>1</sup>				
	_	. 2	Dissolved		Total
	Bacteria <sup>2</sup>		Copper <sup>3</sup>	TSS <sup>4</sup>	Phosphorus <sup>5</sup>
Surface Water	406	126			
Body	MPN/100 mL	MPN/100 mL	5 μg/L		
Balch Creek	48/56	3/4	NM	NA	NA
Columbia Slough	124/126	9/9	54/54	48/54	46/54
Fanno Creek	65/104	0/8	10/12	NA	66/104
Johnson Creek	73/113	0/9	110/110	106/114	NA
Tryon Creek	25/27	2/3	9/9	NA	NA
Willamette River	144/144	4/4	48/48	NA	NA

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

NM = Not Measured

NA = Not applicable

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 65 and about 85 percent of the time (a substantial improvement over the previous permit period). The mainstem Willamette River and the Columbia Slough meet the single sample bacteria standard almost all the time and the geometric mean standard all the time, even though the eastside CSO control in the Willamette River has not been completed.

With two exceptions in Fanno Creek, all streams meet the dissolved copper guidance provided by NMFS and thought to be protective of salmonid species.

The Columbia Slough meets its phosphorus TMDL concentrations at most locations about 85 percent of the time. Fanno Creek and its tributaries, on the other hand, meet the phosphorus TMDL concentration only about 60 percent of the time. However, these numbers show a clear improvement over last year.

Johnson Creek and the Columbia Slough meet their respective TSS guidance values, established to meet the toxics TMDLs, over 85 percent of the time.

 $<sup>^2</sup>$  406 MPN/100mL is the single sample standard; 126 MPN/100mL is the 30-day geometric mean of  $\geq$  5 samples. (For this summary, the geometric mean of weekly or monthly data collected throughout the permit year was calculated for each monitoring location separately.)

<sup>&</sup>lt;sup>3</sup>Compared to NMFS guidance value for salmonids of 5 µg/L.

<sup>&</sup>lt;sup>4</sup> Compared to guidance value: Columbia Slough – 25 mg/L; Johnson Creek – 20 mg/L.

<sup>&</sup>lt;sup>5</sup> 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.

# Results of Pesticide Pilot Monitoring Study in Johnson Creek

A pesticide pilot monitoring program was implemented in Johnson Creek in order to evaluate the likelihood of detecting common pesticides in surface water using standard analytical methodologies. This was done in anticipation of potential new requirements in the renewed MS4 permit scheduled to be issued in 2010.

At four locations in Johnson Creek 16 pesticides were analyzed from two sampling events in late spring 2009. Two pesticides (2,4-D and triclopyr) were detected once each at the most upstream monitoring location. The detections were just barely above the MRL of  $0.08~\mu g/L$ . These detections are in line with findings by USGS in the Clackamas River, indicating that detection of many pesticides may be difficult using standard sampling techniques and commercially available analytical methods.

# Comparison of 2008 and 2009 Ambient Monitoring Trend Analyses

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

- 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 without consideration for seasonality or other stratification. 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 were presented in the City's 2008 permit renewal application and included data through the beginning of April 2008. In some streams and for some analytes, fewer than 30 data points were available (see the consideration below), which made it very difficult to detect any trend. Since then, up to 16 additional data points have been collected, enabling improved trend analyses.

Trend analyses are a powerful tool for detecting changes in water quality over time (temporal trends). However, the following considerations must be taken into 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, aka 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.
- The MS4 trend analysis subcommittee (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, or true long-term trends may not be observable because of the limited number of data points.
- 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 may not in itself be very meaningful.

#### Willamette River

For most analytes and all but one location, 136 monthly data points over 12 years (1998-2009) were available for analysis (Table 1). Nutrient data (ammonia, nitrate, and phosphorus) at the Kelly Point monitoring station were available for only a six-year period (2000-2005; 51 data points); therefore, no trend analyses were conducted in 2009 because no new data are available.

Overall, the water quality trends continue to be very positive during the wet and dry seasons. Specifically, the following differences are observable when comparing the 2008 and the 2009 trend analyses:

- All trends observed in 2008 are still present in 2009.
- In 2009, additional significantly improving trends are present for total and dissolved copper, total dissolved solids, conductivity, and dissolved solids.
- In 2009, a year-round declining trend for ammonia-nitrogen at the most upstream monitoring location is present. However, there is no corresponding trend at the most downstream monitoring location.

**Table 1. WILLAMETTE RIVER** 

					2009											
			Upstream	==> Do\	wnstrea	m				Up	strear	n ==> l	Dowr	strea	am	
Location			F			D	)			I	F				D	
Season	N	Dry	Wet	Year	N	Dry	Wet	Year	N	Dry	Wet	Year	Ν	Dry	Wet	Year
Analyte																
Total Suspended Solids	120	Ψ			103	¥			136	Û			119	Û		
Copper, total (Cu,T)	120	¥		¥	103	Ψ			136	V	Û	¥	119	¥		Ψ.
Copper, dissolved (Cu,d)	120	Û			103	Ψ			136	V		V	119	¥		Û
Lead, total (Pb,T)	120	¥	¥	•	103	Ψ	Û	¥	136	¥	¥	¥	119	Ψ	¥	Ψ
Lead, dissolved (Pb,d)	120	¥	¥	¥	103	¥	Ψ	Ψ	136	Ψ	Ψ	Ψ	119	<b>→</b>	→	Ψ
Zinc, total (Zn,T)	120	¥	¥	•	103	Ψ	Ψ	¥	136	Ψ	Ψ	Ψ	119	<b>→</b>	<b>→</b>	Ψ
Zinc, dissolved (Zn,d)	120	¥	¥	•	103	Ψ	¥	¥	136	¥	¥	¥	119	Ψ	¥	Ψ
Total Dissolved Solids	120				103				136				119	¥		Û
Ammonia-Nitrogen (NH₃-N)	67	<b>^</b>			51				93	<b>1</b>		<b>1</b>				
Nitrate-Nitrogen (NO₃-N)	67	仓			51		Û		93							
Total Phosphorus	67	Û	Ţ		51		¥		93	Ψ	Ψ	Ψ				
E. coli	120			仓	103	Û			136				119	¥		
Conductivity	120				103				136				119	¥		Û
DO	120		仓	仓	103		<b>1</b>	<b>1</b>	136	仓	<b>1</b>	仓	119	仓	<b>^</b>	<b>^</b>
рН	120				102				136		û		118		仓	
Temperature	120				102				136				118			
Secchi Disk Depth	118	个			101				134	<b>1</b>			117			

Location Key

F = WAVERLY COUNTRY CLUB (RM 17.9)

D = SOUTH KELLY POINT PARK (RM 1.1)

N = Number of data points available for trend analysis

Dry = Trend analyses performed on data from the dry season (May-October)

Wet = Trend analyses performed on data from the wet season (November-April)

Year = Trend analyses performed on data for the full year

 ↑
 Significant increasing trend (p < 0.05)</td>

 ↓
 Significant decreasing trend (p < 0.05)</td>

 û
 Somewhat significant increasing trend (0.05 ≤ p < 0.1)</td>

 ↓
 Somewhat significant decreasing trend (0.05 ≤ p < 0.1)</td>

--- No significant trend observed

Improving trend ( for DO and Secchi disk depth, an increasing trend shows improvement)

No new data available

# Columbia Slough

A robust set (> 30 data points) of water quality data is available for 19 constituents, ranging from field measurements and conventional parameter to nutrients and metals. Anywhere from about four years (37 data points) to over 10 years (136 data points) of data are available for trend analyses (Table 2). For comparison to the 2008 trend analyses, the most upstream (AWB) and most downstream (SJB) sampling locations within the city boundaries were selected for analyses.

During the wet season, all significant trends, with the exception of chlorophyll a, E. coli, and conductivity at location AWB, indicate improving water quality. In addition, BOD<sub>5</sub> shows increasing concentrations at the downstream SJB location. It is unclear why chlorophyll a concentrations are increasing, while ortho phosphorus concentrations are decreasing.

E. coli still shows increasing trends in AWB that may be linked to the presence of a large number of water fowl in the wetlands just upstream of this location.

Few differences between the 2008 and 2009 trend analysis are present. In 2009, analyses for copper and zinc were performed for the first time, since more than 30 data points were available. Surprisingly, dissolved copper concentrations show a significantly decreasing trend in SJB during the dry season.

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

		2008								2009							
			Upstre	eam ==>	Dowr	nstrear	n				Upstre	eam ==>	Dow	nstrea	n		
Location		A	WB			S	JB			Α	WB			S	JB		
Season	N	Dry	Wet	Year	N	Dry	Wet	Year	N	Dry	Wet	Year	N	Dry	Wet	Year	
Analyte																	
Total Suspended Solids	128		¥	¥	117				136	¥	¥	¥	125				
Copper, total (Cu,T)									37			Û	37				
Copper, dissolved (Cu,d)									37				37	<b>→</b>		Û	
Lead, total (Pb,T)	115	¥	<b>→</b>	¥	102	¥	<b>→</b>	¥	123	<b>→</b>	<b>→</b>	<b>→</b>	110	<b>→</b>	Ψ	Ψ	
Lead, dissolved (Pb,d)	115	¥	<b>→</b>	<b>→</b>	102				123	<b>→</b>	<b>→</b>	¥	110				
Zinc, total (Zn,T)									38				37				
Zinc, dissolved (Zn,d)									38				37	仓			
Ammonia-Nitrogen (NH <sub>3</sub> -N)	128				117	¥	Û	<b>→</b>	136	<b>↑</b>			125	<b>→</b>	Û	¥	
Nitrate-Nitrogen (NO₃-N)	128	<b>→</b>	₽	<b>→</b>	117	<b>\</b>	<b>→</b>	<b>→</b>	136	<b>→</b>		<b>→</b>	125	<b>→</b>	<b>→</b>	<b>\</b>	
Total Phosphorus	128		<b>→</b>	<b>→</b>	117		<b>→</b>		136	-	<b>→</b>	<b>→</b>	125	-	¥	¥	
Ortho-Phosphorus	128		Û	Ţ	117	V		Ţ	136		Û		125	<b>→</b>		Û	
BOD <sub>5</sub>	127		<b>←</b>	-	115	<b>↑</b>		<b>←</b>	135	<b>→</b>		-	123	<b>←</b>		企	
Chlorophyll a	124	Û			116	<b>↑</b>		仓	132		<b>↑</b>	仓	124	<b>↑</b>		<b>↑</b>	
E. coli	126	<b>1</b>		<b>↑</b>	117		<b>→</b>		134	<b>↑</b>		仓	125		V	¥	
Conductivity	73	<b>↑</b>	<b>←</b>	<b>←</b>	71				81	<b>←</b>	<b>←</b>	<b>←</b>	79				
DO	72				66	<b>^</b>	<b>^</b>	<b>^</b>	80				74	<b>1</b>	<b>^</b>	<b>1</b>	
pН	73				71	<b>↑</b>			81				79				
Temperature	73				71				81				79				
Secchi Disk Depth	64	<b>1</b>		<b>^</b>	64				72	<b>1</b>		<b>1</b>	72			仓	

Location Key

AWB = Airport Way Bridge B

SJB = St. John's Landfill Bridge

N = Number of data points available for trend analysis

Dry = Trend analyses performed on data from the dry season (May-October)

Wet = Trend analyses performed on data from the wet season (November-April)

Year = Trend analyses performed on data for the full year

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)

No significant trend observed



Improving trend (for DO and Secchi disk depth, an increasing trend shows improvement) No data available

#### Johnson Creek

On average, about 7 years (84 data points) of continuous data are available for trend analyses (Table 3). For comparison with 2008, the most upstream (JC-6) and the most downstream (JC-2) monitoring locations within the City of Portland were selected for the analysis.

Trends in 2008 and 2009 show few differences and, overall, few constituents show significant differences.

During the wet season, ortho-phosphorus shows a decreasing trend at both locations and for both years.

While encouraging, these trends are insufficient to draw any conclusions as to their cause. However, it should be noted that no significantly increasing trends for any constituents of concern were observed.

Overall, the water quality trends show some improvement in Johnson Creek, but the 7-year record does not appear to be sufficient to see smaller differences that may possibly be present.

**Table 3. JOHNSON CREEK** 

		2008									2009			
		Up	stream	==> Do	wnstr	eam			U	ostrear	n ==> D	ownst	ream	
Location		JC-6 JC-2							JC-6 JC			JC-2		
Season	N	Dry Wet Year Dry			Dry	Wet	Year	N	Dry	Wet	Year	Dry	Wet	Year
Analyte														
Total Suspended Solids	67							84						
Copper, total (Cu,T)	67							84						
Copper, dissolved (Cu,d)	67							84						
Lead, total (Pb,T)	67							84						
Lead, dissolved (Pb,d)	67							84	Û	-				
Zinc, total (Zn,T)	67							84						
Zinc, dissolved (Zn,d)	67							84						
Nitrate-Nitrogen (NO <sub>3</sub> -N)	67							84						
Ortho-Phosphorus	67		¥	¥		<b>\</b>	Û	84	<b>→</b>	<b>→</b>	Û		Û	
E. coli	67							84						
Conductivity	66							82	Û					
DO	67	企		<b>^</b>				83	企	仓				
рН	67	<b>^</b>	<b>^</b>	<b>↑</b>		<b>↑</b>		83	<b>↑</b>	<b>↑</b>	<b>↑</b>		<b>↑</b>	<b>↑</b>
Temperature	67							83						

Location Key

JC-2 SE UMATILLA ST BRIDGE (MAIN CHANNEL)
JC-6 SE 158TH AVE BRIDGE (MAIN CHANNEL)

N = Number of data points available for trend analysis

Dry = Trend analyses performed on data from the dry season (May-October)

Wet = Trend analyses performed on data from the wet season (November-April)

Year = Trend analyses performed on data for the full year

↑ Significant increasing trend (p < 0.05)

• Significant decreasing trend (p < 0.05)

û Somewhat significant increasing trend  $(0.05 \le p < 0.1)$ U Somewhat significant decreasing trend  $(0.05 \le p < 0.1)$ 

--- No significant trend observed

Improving trend ( for DO and Secchi disk depth, an increasing trend shows improvement)

# Fanno Creek

Between 11 years (133 data points) and 16 years (194 data points) of monthly data are available for trend analyses (Table 4). Data from the most upstream (FC-9) and most downstream (FC-6) sampling locations were analyzed. Data collection for Cu, Pb, and Zn restarted in 2006; therefore, insufficient data are available to conduct a trend analysis.

Unlike in 2008, almost all significant trends in 2009 show improving water quality. The most significant change from 2008 is the improving E. coli trend at the downstream location FC-6, which was not observable in 2008.

**Table 4. FANNO CREEK** 

		2008										20	09			
			Upstre	eam ==>	> Dowr	nstrear	n				Upstre	eam ==>	> Dowr	strear	n	
Location		F	C-9			F	C-6		FC-9				FC-6			
Season	N	Dry	Wet	Year	N	Dry	Wet	Year	N	Dry	Wet	Year	N	Dry	Wet	Year
Analyte																
Total Suspended Solids	173				173		Û		194				189		Û	
Total Solids	173	¥	Û	¥	173		¥		194	¥	<b>\</b>	<b>→</b>	189		¥	
Ammonia-Nitrogen (NH₃-N)	138				134	<b>1</b>			155				150			
Total Phosphorus	173				173		¥	¥	194	①			189		¥	¥
Ortho-Phosphorus	117	仓			117	<b>1</b>			133				133	<b>1</b>		
E. coli	145	Û		¥	144				161	¥	<b>+</b>	<b>\</b>	160		Û	¥
Conductivity	117				117				133				133			
DO	155				155	Û			172		<b>^</b>		171			
pН	173			Û	173	<b>\</b>	Û	4	194				189			
Temperature	173		¥	Û	173				181		<b>\</b>	Û	189			

Location Key

FC-9 3975 SW BVTN-HLSDLE HWY (MAIN CHANNEL) FC-6 6900 SW BVTN-HLSDLE HWY (MAIN CHANNEL)

N = Number of data points available for trend analysis

Dry = Trend analyses performed on data from the dry season (May-October)

Wet = Trend analyses performed on data from the wet season (November-April)

Year = Trend analyses performed on data for the full year

↑ Significant increasing trend (p < 0.05)
↓ Significant decreasing trend (p < 0.05)

↑ Somewhat significant increasing trend

û Somewhat significant increasing trend  $(0.05 \le p < 0.1)$  U Somewhat significant decreasing trend  $(0.05 \le p < 0.1)$ 

--- No significant trend observed

Improving trend (for DO, an increasing trend shows improvement)

# Tryon Creek

Data collection for TSS, field parameters, and nutrients started in 1997, for a total of over 140 data points (Table 5). Data collection for metals started in 2005, and only 45 data points were available for trend analyses.

Overall, few significantly improving temporal trends were found. The most dramatic change from 2008 occurred for metals during the wet season. All three total metals showed significantly decreasing trends in 2009, which is most likely because the number of data points in 2009 increased by about 40 percent compared to the 2008 analysis. It is unclear why nitrate and orthophosphorus are significantly increasing during the dry season.

Table 5. TRYON CREEK

			2008				2009	·
Location			4				4	
Season	N	Dry	Wet	Year	N	Dry	Wet	Year
Analyte								
Total Suspended Solids	129	<b>1</b>			142		Û	
Total Solids	129	企			142			
Nitrate-Nitrogen (NO <sub>3</sub> -N)	129	<b>^</b>		<b>^</b>	142	<b>↑</b>		<b>^</b>
Total Phosphorus	129				142			
Ortho-Phosphorus	128	<b>1</b>			141	<b>↑</b>		
Copper, total (Cu,T)	32				45	¥		Ψ
Copper, dissolved (Cu,d)	32				45			
Lead, total (Pb,T)	32				45		Û	Ψ
Zinc, total (Zn,T)	32				45	Û		Ψ
Zinc, dissolved (Zn,d)	32				45			
E. coli	129				142			
Conductivity	129				142			
DO	129				141		企	
рН	129				142	<b>↑</b>	<b>^</b>	<b>↑</b>
Temperature	129		¥		142		Ψ	

Location Key

4 = 10750 SW BOONES FERRY RD (DS OF CULVERT)

N = Number of data points available for trend analysis

Dry = Trend analyses performed on data from the dry season (May-October)

Wet = Trend analyses performed on data from the wet season (November-April)

Year = Trend analyses performed on data for the full year

 ↑
 Significant increasing trend (p < 0.05)</td>

 ↓
 Significant decreasing trend (p < 0.05)</td>

 ↑
 Somewhat significant increasing trend (0.05 ≤ p < 0.1)</td>

 ↓
 Somewhat significant decreasing trend (0.05 ≤ p < 0.1)</td>

 No significant trend observed

Improving trend (for DO, an increasing trend shows improvement)

# 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. 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	10/31- 11/02/08	> 72	0	0	0.70	0.68
Columbia Slough	3/14-15/09	5 (> 72)*	0.32 (0.06)*	0.32 (0.06)*	1.18	0.62
Slough	3/25/09	33	0.3	0.03	0.38	0.37
S45U Johnson	10/31 - 11/02/08	> 72	0	0	0.61	0.55
Creek	2/23-24/09	> 72	0.03	0.03	0.72	0.65
	3/14-15/09	> 72	0	0	1.37	1.00
OF 19	11/20/08	> 72	0	0	0.59	0.46
Willamette	2/23/09	> 72	0	0	0.44	0.43
River	3/14-15/09	> 72	0.07	0.07	1.09	0.87

<sup>\* 10</sup> aliquots missed at beginning due to clogged sample tubing. Dry periods are for both before the first successful sample collection and before the beginning of the storm event

Comparison to Selected Important Water Quality Standards/Criteria <sup>1</sup>

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

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

# <u>M1</u>

Concentrations of all analytes were within the range previously observed. The late October/early November storm event occurred after a 10-day dry period and showed pollutant concentrations of all analytes that were substantially higher than the average. Dissolved lead had the highest concentrations in over 10 years. Like last year, E. coli concentrations were among the lowest observed since 1991, and two of the three samples were below the single sample in-stream criterion of 406 MPN/100 mL.

Between 25 and 52 data points were available for water quality trending analyses. Most analytes, including the heavy metals cadmium, copper, and lead, show a significantly ( $p \le 0.05$ ) or somewhat significantly ( $p \le 0.1$ ) decreasing trend. Solids and nutrients 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

Unlike outfall M1, the concentrations of most pollutants during the first storm event (late October/early November 2008) were not substantially higher than during the other two storm events monitored, even though total copper, lead, and zinc were the highest observed to date. Dissolved metals and nutrients were within the range previously observed. E. coli concentrations in all three storm events were the highest seen to date at this outfall even though they were within the range found at other outfalls.

<sup>&</sup>lt;sup>2</sup> Number of samples that are below standard or guidance value/number of samples collected.

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

<sup>&</sup>lt;sup>4</sup>Compared to NMFS guidance value for salmonids of 5 μg/L.

<sup>&</sup>lt;sup>5</sup> Compared to guidance value: Columbia Slough – 50 mg/L; Johnson Creek – 20 mg/L.

<sup>&</sup>lt;sup>6</sup> Spring to fall average compared to Columbia Slough TMDL of 0.155 mg/L.

As expected, no significant trends were observed for the most part, mainly because of the small number of data points available. (Trend analyses require around 30 data points, considering the small changes expected over time.)

#### OF 19

Concentrations of many analytes from the February 22, 2009 storm event were substantially above the long-term averages. As observed previously, these high concentrations appear to be related to long antecedent dry periods and not the amount or intensity of the rainfall.

Between 27 and 32 data points were available for water quality trending analyses. All trends point to lower concentrations across all pollutant types, heavy metals as well as nutrients. 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		OF19		S45U/JCF
Analyte	N	Trend	N	Trend	N	Trend
Total Suspended Solids (TSS)	52	<b>→</b>	32		9	
Total Cadmium (Cd,T)	37	<b>→</b>	32	<b>\</b>		
Dissolved Cadmium (Cd,d)	36	<b>•</b>	32	Ψ		
Total Chromium (Cr,T)	25	Û	27		9	
Dissolved Chromium (Cr,d)			27			
Total Copper (Cu,T)	52		32	Ψ	9	
Dissolved Copper (Cu,d)	52	<b>•</b>	32	¥	9	<b>^</b>
Total Lead (Pb, T)	52	<b>4</b>	32		9	
Dissolved Lead (Pb,d)	52	<b>•</b>	32	Ψ	9	
Total Zinc (Zn,T)	52		32		9	
Dissolved Zinc (Zn,d)	52		32	¥	9	
Hardness	49	<b>^</b>	31		9	
COD	32		29			
Ammonia-Nitrogen (NH <sub>3</sub> -N)	51		32	Û	9	
Nitrate-Nitrogen (NO <sub>3</sub> -N)	52	<b>→</b>	32	<b>+</b>	9	仓
Total Phosphorus	52	<b>→</b>	32		9	
Ortho Phosphorus	52	¥	32	<b>\</b>	9	
Total Dissolved Solids (TDS)	44	<b>→</b>	32		9	
Conductivity	32	<b>→</b>	29		7	

# NOTES

Location Key	
M1	Columbia Slough - NE 122nd Ave
OF19	Willamette River - Portland Harbor
S45U/JCF	Johnson Creek - SE 45th Ave/Umatilla
	No significant trend observed
N	Number of data points in trend analysis
<b>^</b>	Significant increasing trend (p < 0.05)
•	Significant decreasing trend (p < 0.05)
仓	Somewhat significant increasing trend (0.05 ≤ p < 0.1)
$\Phi$	Somewhat significant decreasing trend (0.05 ≤ p < 0.1)
25	Number of data points does not meet minimum requirement set by the MS4 trend analysis subcommittee (MTAS)
	Improving trend
	No data available

# 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 regular stormwater and water quality subcommittee meetings and participating in joint efforts and projects (e.g., 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. This process is still ongoing and is expected to culminate in the issuance of a new permit in 2010.

# Section III MULTNOMAH COUNTY



Multnomah County Municipal NPDES Annual Report Permit Year 14 July 1, 2008 – June 30, 2009

**Portland Area Permit #101314** 

**Submitted November 1, 2009** 

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 14 (July 1, 2008 through June 30, 2009) 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 14, 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 14.
- Assessment of Controls.
- Any proposed modifications or changes to the schedule or activities.

# Best Management Practices (BMPs) Matrix for Permit Year 14

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
and ed	Involvement and Education (PI). These a acate the public about the causes of storm reams and rivers, and the need for stormwage active participation in pollution reduc	water pollution, the effects on vater management and to			New measurable goals are proposed for in the new draft of the SWMP.	
PI1.	Participate in Regional Public Education Efforts. Continue support and direct participation for public involvement and public education campaigns.	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.	Public Affairs	<ul> <li>The Regional Coalition for Clean Rivers &amp; Streams focused this year's efforts to develop a brand to coalesce the different actions to improve water quality. Website continues to be the main education tool. Social media, web ads and radio were used to attract people to their website. A website quiz was developed as a form of evaluation. Web tracking results show that only 0.1% of viewers clicked through to web content from web ads. New ideas to improve visits are being developed.</li> <li>Public Affairs staff attended monthly meetings to participate in the development and reviews of the Coalition's communications strategy. Public Affairs staff helped to promote the website to internal and external audiences.</li> <li>County participated at the 2008 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.</li> <li>County participated in the Children's Clean Water Festival at Portland Community College with watershed model.</li> </ul>	Notes of meetings and annual report.     Participation in the coalition and evaluation of campaigns.	On schedule.  No modifications.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
PI2.	Participate in Public Meetings. Present information to public regarding Multnomah County programs and regulation, particularly water quality program.	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.	Program Management	Water Quality staff attended meetings of the Johnson Creek watershed council.      Water Quality staff attended the Lower Willamette Agricultural Water Quality Management Area Local Advisory Committee annual meeting.	Notes and records of meeting attendance.	On Schedule. No modification.
PI3.	Distribute public education information regarding stormwater.  Brochures and educational materials at County offices, public water quality events, and maintenance of County Water Quality Program website.	Provide information to educate and inform the public about stormwater pollution problems and to encourage public involvement in stormwater pollution prevention programs.	Program Management	Various water quality BMP fact sheets are made available in the County Planning office, however very few have been taken. The effectiveness of this BMP should be reviewed.	Estimate number of brochures and educational materials.     Consider most effective venues for distribution of materials.	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
PI4.	Training and education for County personnel 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.	Through training of County staff, minimize/eliminate the impact of on-the-job activities to the MS4 and stormwater quality.	All Functional Groups	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.      Road Maintenance staff attended the Emergency Spill Response Annual refresher training.	Track attendance at water quality conferences, trainings, etc. Track educational material disseminated to staff. Keep records of trainings provided.	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.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
PI5.	Implement the Multnomah County Adopt-A-Road program 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	BMP not implemented in the Portland permit area.	• 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 adoptaroad 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	BMP not implemented in the Portland permit area.	• N/A	On Schedule. No Modification.
PI7.	Maintain Public Involvement during the CIP Process. 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	There has been an extensive 2-year public involvement process to select the locally-preferred alternative for replacing the Sellwood Bridge.	Record involvement in public meetings through regular CIP process.	On schedule.  No modifications.
PI8.	Facilitate Public Reporting of Illicit Discharges including illegal dumping 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	No activity to report	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 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
Operations and Maintenance (OM). These act Implementation of operations and maintenance prastorm sewers and other facilities to reduce pollutar separate storm sewer system.	actices for public streets, bridges,			New measurable goals are proposed for in the new draft of the SWMP.	New Draft: Review the RMOM for Potential Updates to Address Water Quality: 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.
OM1. Inspect and maintain the Storm Drainage System including inlets, catch basins, water quality facilities and stormwater conveyance system on a regular basis	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.	Road Maintenance	<ul> <li>Catch basin storm filters inspected, maintained and replaced on Broadway and Burnside Bridges. The used filter cartridges are returned to the manufacturer for recycling.</li> <li>Routine bridge maintenance includes clearing debris and flushing drains every three months to ensure drains are not plugged and possible overflow.</li> </ul>	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.	New Draft: The task to inspect sweeping equipment was removed because it is a routine activity covered under the Road Maintenance and Operations Manual.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
OM2.	Conduct street sweeping to include scheduled sweeping, equipment review, and training on a regular basis. Revise and update schedule, equipment, and training as necessary.	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.	Road Maintenance	County roads operated and maintained by agreement with City of Portland.	Not Applicable	On schedule. No modifications.
OM3.	Properly dispose of road waste material. 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. Vactor 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.	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.	Road Maintenance Emergency Response	County roads operated and maintained by IGA with Portland. Portland is responsible for proper disposal of road waste materials on County roads.	Review records and study results, implement recommendations as practicable.	On schedule.  No modifications.
OM4.	Evaluate anti-icing operations. 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.	Reduce harmful effects of roadwa anti-icing activities and materials water quality by proper sand collection methods and by prohib the use of glycol and salt.		BMP not implemented in the Portland permit area. County roads operated and maintained by IGA with Portland.	Not applicable.	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.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
OM5.	Regulate truck hauling practices to minimize pollutant discharges. 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.	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.	Road Maintenance	Bridge and Road Crews are regularly briefed on proper hauling procedures.	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.	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).
OM6.	Perform culvert maintenance 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.	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.	Road Maintenance	BMP not implemented in the Portland permit area. County roads operated and maintained by agreement with Portland.	Not applicable.	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.
OM7.	Conduct right-of-way and road shoulders maintenance in ways that avoid and prevent future adverse water quality impacts Continue review of current maintenance practices.	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.	Road Maintenance	BMP not implemented in the Portland permit area. County roads operated and maintained by agreement with Portland.	Not applicable.	On schedule.  No modifications.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities	
OM8.	Conduct ditch maintenance. 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.	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.	Road Maintenance	BMP not implemented in the Portland permit area. County roads operated and maintained by agreement with Portland.	Not applicable.	On schedule.  No modifications.	
investig	Illicit Discharges Control (ILL). These activities are designed to prevent, identify, nvestigate, and if appropriate, control/eliminate any non-stormwater discharges into he municipal separate storm sewer system.  New measurable goals are proposed for in the new draft of the SWMP.						
ILL1.	Interagency coordination on spill response. 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.	Improve procedures to ensure effective interagency coordination and communication, and rapid response.	Emergency Response	No activity to report	No longer needed	New Draft: This BMP was removed as a spill response process has been developed and this BMP is no longer relevant.	

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
ILL2.	Implement Spill response in County areas. 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.	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.	Emergency Response	No activity to report	Review logs on an annual basis.     Review the RMOM as necessary to ensure revisions were made. Note evaluation in BMP file.	On schedule.  No modifications.
ILL3.	Address spills from private truck haulers. 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.	Control discharges from private hauling activities to the extent that they are impacting the County right-of-way.	Road and Bridge Engineering Right-of-Way Permits	No activity to report in permit area.	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.	On schedule.  No modifications.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
ILL4.	Erosion control for County contractors. 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.	Assure that the design standards in place adequately address water quality issues throughout the permit area.	Road and Bridge Engineering Right-of-Way Permits	Morrison Bridge sidewalk expansion project: weekly erosion control reports were submitted by the contractor and reviewed by Bridge QA/QC staff. Erosion control BMPs were used throughout the project.	Records kept of Erosion and Sediment Control Plan (ESCP) inspection activities.     Review contractor ESCP to ensure compliance.	New Draft: Added a task to include requirements for pollution controls in contracts for public projects that address additional nonsediment related discharges (e.g., paints, solvents, metals, etc.).
ILL5.	Pollution control for County and contractors. 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.	Eliminate/reduce discharge of all pollutants from construction sites which adversely impact stormwater and receiving water quality.	Land Use and Transportation Planning Road Engineering Bridge Engineering	Morrison Bridge sidewalk expansion project: the contractor was required to clean up construction debris on a regular basis. Work was reviewed by the Bridge QA/QC staff.	Review annually, records kept by staff for the inspection and monitoring of construction sites.	This BMP was removed as the activities for this BMP were added to the BMP described above.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
ILL6.	Identify and investigate Illicit discharges. 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	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.	Track follow up and inspection activities.	On schedule.  No modifications.
ILL7.	Identify and investigate sanitary discharges to the storm sewer.  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	Bridge Maintenance staff inspected and maintained sanitary facilities quarterly on the four Willamette River Bridge with restroom facilities.      County roads operated and maintained by IGA with Portland. Portland inspects for illicit connections during road maintenance activities.	Track inspections of the operation of the sewage holding facility for prohibited discharge.	On schedule.  No modifications.
pollutan	evelopment Standards (ND). These activing a discharges and other water quality impactment and redevelopment during and after comment and redevelopment during and after comments.	ts associated with new			New measurable goals are proposed for in the new draft of the SWMP.	
ND1.	Coordinate transfer of land use planning authority 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 County jurisdiction as it has been annexed to Portland, Troutdale or Gresham. As this area is transfer the County will continue to coordinate to ensure continuous la use planning services including NPDES roles and responsibilities		No activity to report	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.	Issue grading permits and hillside development permits 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	BMP not applicable in the Portland Permit Area	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 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
ND3.	Enforce stream setback requirements 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.	Preserve significant vegetated areas adjacent to identified water bodies to reduce stormwater runoff and the pollutants carried with it	Land Use Planning Compliance	BMP not applicable in the Portland Permit Area	Review compliance with conditions of permit.     Review annual number of complaints against enforcement actions, including voluntary compliance.	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.
ND4.	Regulate storm water quality and quantity. 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.	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.	Land Use Planning Right-of-Way Permits Road Engineering Bridge Engineering	No activity to report	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.	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.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
modific	rral Controls (STR). These activities are duations (constructed facilities) to existing systems in discharges from the municipal separate	New measurable goals are proposed for in the new draft of the SWMP.				
STR1.	Address water quality with new capital or roadway improvement projects. 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.	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. Apply consistent practices in addressing water quality impacts.	Road Engineering Bridge Engineering	Morrison Bridge sidewalk expansion project: four stormwater catch basin filters were installed on the bridge deck to filter discharge to Willamette River. Conventional type catch basins were also installed for portions of deck that drained to the Portland combined sewer system.	Track the number of stormwater treatment facilities installed as part of capital or road way improvement projects.  Keep records of design/permit reviews.	On Schedule No modifications
STR2.	Retrofit existing facilities for water quality benefit. 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	Morrison Bridge sidewalk expansion project: four stormwater catch basin filters were installed on the bridge deck to filter discharge to Willamette River. Conventional type catch basins were also installed for portions of deck that drained to the Portland combined sewer system.	Record retrofit progress.	On Schedule.  No modifications.
STR3.	Inventory and map the County storm sewer system. 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	No activity to report.	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 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
the nati	al System (NS). These activities are designated environment/functions to reduce pollipal separate storm sewer system.				New measurable goals are proposed for in the new draft of the SWMP.	
NS1.	Conduct vegetative management activities. 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.	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.	Road Maintenance Bridge Maintenance	Bridge section continues to maintain vegetation on bridge abutments when necessary.	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.	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
NS2.	Encourage the use of native vegetation. 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.	Reduce pesticide use and encourage use of self-sustaining vegetation as means of improving water quality.	Land Use & Transportation Planning Bridge Engineering & Maintenance Road Engineering & Maintenance	<ul> <li>Limited applicability in Permit area only in bridge right-of-way. The County no longer has planning or zoning authority within the permit area.</li> <li>No activity of this BMP in the permit area.</li> </ul>	Implementation monitoring and compliance with vegetation plan.      Track number of permitted projects.	On schedule. No modifications.
	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.	Stormwater program management. 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> <li>Utilized e-mail to provide program updates to functional group members.</li> <li>Managed record keeping system for use by the County staff to track work done in the field, meetings attended, etc.</li> </ul>	Keep records of water meetings attended.     Evaluate sufficiency of BMP program reporting by functional groups.	On schedule.  No modifications.

	Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) for BMP Implementation	Key Accomplishments for Permit Year 14	Assessment of Controls	Proposed Modifications to Schedule or Activities
PM2.	Assess and evaluate the stormwater BMP program. 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	Water Quality staff attended ACWA NPDES meetings to discuss permit renewal.      Water Quality staff has submitted a revised Stormwater Management Plan with the current permit renewal submittal package to DEQ.	Keep records of work sessions, including training, evaluation process and results.	On Schedule.  No modifications.
PM3.	Maintain field records. 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 overtime 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	Records are kept by Bridge Maintenance and Engineering groups.	Staff review of field logs.	On schedule.  No modifications.

#### IV. STORMWATER MANAGEMENT PROGRAM BUDGET

Program activity within the Portland Permit area for Permit year 14 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 14 (Fiscal Year 2008-2009).and provides the anticipated budget for PY 15(Fiscal Year 2009-2010).

**Portland Permit Area Budget** 

		- 0
Program Area	PY 14 Budget	PY 15 Anticipated Budget
Water Quality Program	\$122,900	\$137,350
Bridge Maintenance/Operations	\$36,300	\$36,300
Bridge Engineering <sup>1</sup>	\$18,994,000	\$13,141,000
Road Maintenance IGA	\$158,000	\$100,000
Road Engineering	\$9,100	\$9,100
Transportation Planning <sup>2</sup>	\$2,750	\$500

The 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.

<sup>&</sup>lt;sup>2</sup> Transportation planning in the permit area is primarily work related to the Sellwood Bridge.

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 requirements and the applicable Multnomah County Code provisions.

**Multnomah County** 

	Multnoman 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</i> , <i>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 exits 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.			



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

ANNUAL REPORT NO. FOURTEEN
Fiscal Year 2008-09
(July 1, 2008 – June 30, 2009)

Prepared for: **Oregon Department of Environmental Quality** 

**November 1, 2009** 

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#### **ACRONYMS**

BMP –	Best	Mana	gement	Practice
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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, 2008 to June 30, 2009 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 6202 acres within the City of Portland (City) Urban Services Boundary (USB). Port property is divided into two primary operating areas: 1) Aviation and 2) 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 20% 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 are 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 are required to be a co-permittee 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 952 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 copermittee 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, and Portland International Center (PIC), totaling approximately 1,597 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 788 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 Area Stormwat		
Svivi Requirements	Tenants Port Operations		Tenants	Port Operations	
		(Terminals and		(Airport, Terminals	
		Industrial Parks)		(T2 and T6))	
Schedule B(1)(a-d) Monitoring Component F	Requirements				
The Port must assist with monitoring efforts			City of Portland have a jo		
in conjunction with requirements as stated	conducted by	y the City to meet the rec	quirements specified under	Schedule B.	
in Tables B-1 and B-2, Schedule B(1)(b)(i-					
vi), Schedule B(1)(c)(i-ii), and Schedule					
B(1)(d).					
Schedule D(2)(c)(i) Implement structural and					
1. Maintenance activities and maintenance	BMP: Implement a Stor	<u> </u>	Covered under 1200-Z	Covered under 1200-Z	
schedule for structural controls.	Cleaning and Maintenan	ce Program.	and COLS permits <sup>1</sup> -	and COLS permits -	
			Schedule A.2.b.iii	Schedule A.2.b.iii	
			(1200-Z) and Schedule	(1200-Z) and Schedule	
2. Planning procedures to control pollutant	The City of Dortland	is responsible for implen	A.2.c.iii (1200-COLS) nenting development stand	A.2.c.iii (1200-COLS)	
discharges from areas of new and	The City of Fortiand	*	il controls.	arus for water quarity	
redevelopment.		Structura	ii controls.		
3. Practices for operating and maintaining	The City of Portland	is responsible for operati	ion and maintenance of the	e public right-of-way.	
streets.		is responsible for operation		puelle light of way.	
	BMP: Implement a Street and Vehicle Maneuvering Area Cleaning and Maintenance Program.				
	1		2	$\mathcal{E}$	
4. Retrofitting flood control facilities.	The City of Portla	and manages water qualit	ty improvements on a mass	ter planning level.	
5. Monitor landfills.	The Port does	not have any operating	or closed landfills within it	ts jurisdiction.	
6. Program to reduce	BMP: Limit Landscape Maintenance Activities Impact on Stormwater.				
pesticides/herbicides/fertilizers.	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					
1. Program, including inspections to	BMP: Implement the Ill	icit Discharge Detection	and Elimination Program.		
eliminate illicit discharges.					
2. On-going field screening program.	BMP: Implement the Ill	icit Discharge Detection	and Elimination Program.		

MS4 permit SWMP Requirements	MS4 Service Areas Not Covered Under Industrial Stormwater Permits		MS4 Service Area Stormwate		
	Tenants	Port Operations	Tenants	Port Operations	
		(Terminals and		(Airport, Terminals	
		Industrial Parks)	1771 1 1 7	(T2 and T6))	
3. Field screening follow-up investigations.					
4. Spill prevention and response.	BMP: Implement a Spil	I Response Program for	Covered under 1200-Z a		
	Port Operated Property.	1 Dannana Tasinina	Schedule A.2.b.ii (1200-	Z) and Schedule A.2.c.11	
	BMP: Implement a Spil Program.	1 Kesponse 1 raining	(1200-COLS)		
5. Promote public reporting of illicit	BMP: Implement Public	Education and Public	Spill response activities a	address employee	
discharges.	Reporting Measures to I		reporting and are covered		
discharges.	Quality.	Toteet Stormwater	COLS permits – see above		
6. Public education re: proper disposal of	BMP: Implement Public	Education and Public	Covered under 1200-Z a		
toxic materials.	Reporting Measures to I		Schedule A.2.b.i [3] (1200-Z) and Schedule		
	Quality.		A.2.c.i [3] (1200-COLS)		
	BMP: Implement a Ten				
7. Control infiltration from sanitary sewers.		Ť Ž	ble for sanitary sewers Cit	y-wide.	
Schedule D(2)(c)(iii) Monitor pollutants from	landfills and industrial fa	cilities.			
1. Industrial inspection program.		dustrial Inspection Progra			
2. Industrial monitoring program.		ty of Portland and Port co		Covered under 1200- Z	
		he City of Portland curren		and COLS permits –	
	analyzes samples from select permitted industries, and monitors multiple			Schedule B.1 and B.2	
		a select industrial outfall to evaluate industria			
	effectiveness.	1 . 1	· c · · c · 4 · 0	'. CD .1 1.	
			ng information from the C The Port also monitors indu		
		ult of illicit discharge inv		ustries suspected of	
Schedule D(2)(c)(iv) Develop a program to in	<u> </u>		estigations.		
Schedule D(2)(c)(iv) Develop a program to implement and maintain construction site BMPs.  1. Procedures for site planning to address  If not covered by a Covered under the If not covered by			If not covered by a	Covered under the	
water quality.	1200-C Permit, then	Port's 1200-CA	1200-C Permit, then	Port's 1200-CA Permit	
2. Requirements for construction site	covered under the City	Permit	covered under the City		
BMPs.	of Portland's erosion		of Portland's erosion		
3. Procedures for inspection and	control ordinance.		control ordinance.		
enforcement.					

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

## Notes:

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.

<sup>&</sup>lt;sup>1</sup> Maintenance may be conducted by the Port as agreed upon in tenant leases.

## 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 and Industrial Development, 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 \$1,073,000 in fiscal year 2008-09 on stormwater expenditures and estimates that expenditures for 2009-10 will be approximately \$1,178,000. PDX (aviation and deicing programs) spent approximately \$2,986,000 on stormwater related expenses in fiscal year 2008-09, and plans to spend approximately \$3,065,000 for fiscal year 2009-10. Stormwater expenditures for the Port's Engineering Department totaled approximately \$281,000 for fiscal year 2008-09, and plans to spend approximately \$301,000 in 2009-10. The Environmental Affairs Department spent approximately \$143,000 for stormwater related expenses in 2008-09 and projects that it will spend approximately \$156,000 in 2009-10. The total estimated 2008-09 stormwater expenditures by the Port were \$4,525,000 and the estimated total projected expenditures for 2009-10 are \$4,742,000.

Department	Estimated 2008-09 Stormwater Expenditures	Estimated 2009-10 Stormwater Expenditures
Marine and Industrial Development	\$1,072,820	\$1,177,395
Aviation (including deicing)	\$2,985,209	\$3,064,981
Engineering	\$281,200	\$301,200
IT	\$22,920	\$22,920
Legal	\$19,640	\$19,640
Environmental Affairs	\$142,325	\$155,325
Total	\$4,524,114	\$4,741,461

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

# 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 specifies the terms and conditions as to 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 FOURTEEN (2008-09)

## 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 2008-09 fiscal year and is 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 2008-09 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

- 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 utilized a maintenance matrix detailing all Portmanaged marine terminal stormwater structures and related inspection schedules. Staff continues to conduct inspections and maintenance activities using the maintenance matrix.
  - MID Properties Maintenance staff continued to 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 and MFM 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 were also replaced in high traffic, heavy activity areas during the annual cleaning, in accordance with the results of the catch basin inspections and cleaning.
  - All stormwater sewer pipes at Terminal 2 pipes were cleaned during 2008-2009 as part of the Superfund program.
  - MID Environmental and MFM staff continued to implement a stormwater 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 temporarily stored in two covered, watertight dumpsters (one for solid material and one for liquid material). As the volume reaches capacity in the dumpster designated for liquids, the water is decanted and disposed of via the sanitary sewer under a BES issued Batch Discharge Permit. The solids remaining in the dumpster are transferred to the adjacent solid material dumpster for storage and eventual off-site disposal.
  - MID Properties Maintenance staff contracted catch basin cleaning and filter replacement at the following sites:
    - o Swan Island McCarthy Park parking lot
    - Swan Island Navigation facility
    - o Terminal 5 Entry Road
    - o Properties Maintenance Shop at Rivergate Industrial Park

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 2008 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 2008 SWMP has been revised accordingly.

- PDX Maintenance staff continuously conducted maintenance on various stormwater conveyance system components including catch basins 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 and the changing responsibility of stormwater conveyance system cleaning at some former Port properties.

- 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)
  - MFM inspected stormwater structures at Terminal 2, Terminal 4 and Terminal 6 monthly in accordance with the MID Stormwater Maintenance Plan. A minimum of annual maintenance was conducted for all facilities. The following stormwater structures are inspected and maintained:
    - o Three Downstream Defenders®
    - o Twelve Oil/Water Separators
    - o Four swales
    - o Three StormFilters®

MID Environmental identified approximately 50 new catch basin locations for the MFM crew to install filter inserts in 2008-2009. During this period, the MFM crew installed 215 catch basin filter inserts at Terminal 6, which included the filters at these new locations. MFM also installed 12 catch basin inserts at Terminal 4.

- PDX installed a new StormFilter<sup>®</sup> system and added it 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 at Swan Island and Rivergate and at the 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 associated stormwater conveyance system infrastructure on Port-owned 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, MID Properties Maintenance)
  - No activities were required to be conducted during the 2008-09 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 completed a two-year major upgrade (in June 2009) to their GIS system, which allows for more sophisticated tracking of stormwater features among other features. Specifically, the upgraded system allows for the editing of infrastructural information in GIS instead of CAD, and therefore, the information can be maintained daily instead of developed annually with maps for operational use.
- During the last year, improvements to the Port's GIS inventory were made with respect to land use coverage and delineation of structural BMP drainage areas in order to complete the benchmarking exercise as part of the NPDES MS4 Permit Renewal Submittal.

- A total of 128 tons (256,000 pounds) of solids were collected at the marine terminals. Collected solids represents material collected as a result of both catch basin cleaning and street sweeping activities, as the material is combined and staged in the same location.
- A total of 137 tons (274,000 pounds) of solids were collected during stormwater conveyance system cleaning activities at PDX.

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

- 1) Employ contract services to sweep the Port Center (Swan Island) parking lot annually. (Responsibility: MID Properties Maintenance)
  - 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.
- 2) Sweep marine terminals annually. If additional sweeping is needed, coordination will occur between the appropriate parties. (Responsibility: MID Environmental, MFM)
  - MFM staff conducts pavement sweeping at Port-managed areas of Terminal 2, Terminal 4 and Terminal 6 annually. A total of 256,000 pounds of solids were recovered this past year as a result of both catch basin cleaning and street sweeping activities. The sweeping and catch basin debris was transferred to covered, watertight storage bins to prevent contact with stormwater runoff. The Port implements a sampling plan for this material, and based upon the test results, appropriately disposes of the debris.
- 3) Sweep Airport Way, Frontage Road and PDX employee parking lots twice per week. (Responsibility: PDX Maintenance)

- PDX maintenance staff conducted sweeping twice per week in the winter and once per week during the summer months at the following locations: Frontage Road; Airport Way; 82<sup>nd</sup> Avenue between Airport Way and Alderwood Avenue; and the PDX employee parking. Additionally, sweeping at various locations throughout the PDX airfield occurs daily.
- 4) Maintain and repair roadway and vehicle maneuvering areas to minimize pollutant impacts to stormwater as needed. (Responsibility: MFM, PDX Maintenance)
  - PDX maintenance staff contracted efforts to remove runway rubber twice in 2008-09 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 maintained indoor storage areas, equipment wash-bays, and debris unloading areas.
  - PDX maintenance staff has discontinued purchase of toluene-based paints in favor of water-based paints. Minimal amounts of toluene are still used to clean paint spraying equipment. As a result, the majority of PDX's existing toluene recovery system has been decommissioned with the exception of the stills which are used to manage toluene used as part of the cleaning of paint spraying equipment.
- 5) Track deicing activities in areas not applicable to the PDX Anti-icing/Deicing Permit. (Responsibility: MFM, MID Environmental, MID Properties Maintenance)
  - MFM applied a total of 55,726 pounds of deicing materials on main roads and common use sidewalk areas at the marine terminals in 2008-09 (specifically from December 15, 2008 to February 1, 2009).
  - MID Properties Maintenance staff applied approximately 50 pounds of deicing materials at the MID Properties Maintenance shop and driveway in 2008-09.

- 1) Record volumes and/or weight of material removed due to sweeping activities.
  - A total of 128 tons (256,000 pounds) of solids were collected at the marine terminals. Collected solids represents material collected as a result of both catch basin cleaning and street sweeping activities, as the material is combined and staged in the same location.
  - A total of 193 tons (386,000 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.
- MFM conducted weed control activities at marine parking areas, rail yards and specific vegetated areas at Marine Terminals 2, 4, and 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:
  - o 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.
  - o 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 was reviewed and did not require an update during the 2008-09 fiscal year.
- 3) Update the *Technical Guidance Document for Pesticides*, as needed (Responsibility: Environmental Affairs)
  - This document was reviewed and did not require an update during the 2008-09 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.

- 1) Track the quantity of pesticides and fertilizers purchased annually.
  - Table 7-1 lists the pesticide, herbicide, and/or fertilizer products and quantities purchased and/or used by each Port maintenance department in 2008-09.

Table 7-1. Port of Portland Pesticide, Herbicide, and Fertilizer Purchases and/or Use in 2008-09

MID Properties Maintenance Pesticide, Herbicide, and Fertilizer Purchased 2008-09

Product Name	Total amt	Unit
Simazine 4L	17.5	gal
Casovan	1500	lb
Pro Zap Pellets	12	lb
Kicker Adjuvant	5.0	gal
Barricode 4FL	1.0	gal
Ranger Pro	25.0	gal
Ultra Defoamit	6.0	qt
Embark 2S	1.0	gal
Kicker	10.0	gal
Garlon3A	5.0	gal
AdWat (R-11)	5.0	gal
Ultra Defoam-IT	6.0	qt
Round Up Pro Max	1.67	gal
Signal Marker	2.0	gal

# MFM Pesticide, Herbicide and Fertilizer Used 2008-09

Product Name	Quantity	Unit
Kicker Fertilizer	4.0	gal
Oust	85.2	OZ
Garlon3A	18.3	gal
Ranger Pro	27.1	gal
Rodeo	6.5	gal

# PDX Maintenance Pesticide, Herbicide, and Fertilizer Used 2008-09

Product Name	Quantity	Unit
Krovar	168	lbs
Roundup	10.5	gal
Oust	96	oz
Escort	21	OZ
Selgaurd	84	OZ
No foam	10.5	OZ

# PDX Landscape Pesticide Used 2008-09

Product Name	Quantity	Unit
Roundup	5.0	gal
22-3-22 turf fertilizer w/80%		
urea formaldehyde	35,000	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 was prepared for staff, which outlines the process for proper disposal of chlorinated water during water line flushing. The work instruction was distributed to MID Environmental and PDX Aviation environmental staff and implemented by the maintenance staff at Marine and PDX.

# BMP: Implement the Illicit Discharge Detection and Elimination Program

- 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)
  - PDX Environmental, Environmental Affairs, and MID 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.
  - MID Environmental staff conducted illicit discharge inspections at 63 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. Two discharges were initially discovered, but based on further investigation of the drainage areas to the two outfalls, MID Environmental staff verified that the observed flow was not the result of an illicit discharge. Additionally, one potential illicit discharge was observed at a City of Portland outfall, and the City was immediately contacted.
  - PDX Environmental staff conducted annual dry season illicit discharge inspections at 14 Port-owned outfalls at PDX and PIC. No illicit discharges were discovered.

# **Additional Activities**

• The Legal Department is working with PDX Environmental, Environmental Affairs, and Port Property Managers to develop an updated written procedure for enforcement of illicit discharges on Port property.

# **BMP Performance Measures**

- 1) Document the number and types of illicit discharges discovered.
  - MID Environmental staff inspected 63 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. Two discharges were discovered but upon further inspected were
    determined to not be the result of an illicit discharge. Additionally, one potential illicit
    discharge was observed at a City of Portland outfall, and the City was immediately
    contacted.
  - PDX Environmental staff inspected 14 Port-owned outfalls as part of the annual dry season illicit discharge inspections. No illicit discharges were found.

# **BMP: Implement a Spill Response Program for Port Operated Property**

- 1) Update, formalize and implement the *Spill Response Procedure for Marine and Properties*. (Responsibility: MID Environmental)
  - MID Environmental staff continued to implement the spill response procedure for Portowned, 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 maintain a database to track spills on non-aviation, Port-owned property. The database is currently being updated, and the full update is scheduled for completion in October 2009.
  - MID Environmental staff conducted monthly inventories of all spill kits at Terminals 2 and 6 during this last fiscal year. Additionally, random inspections of spill kits occur when MID personnel are on site.
  - MID Environmental staff continued to implement Spill Prevention Control and Countermeasures Plans for Terminal 6 and the Navigation Facility. A review of the T6 SPCC plan began this past summer, and an updated version of the plan should be complete in the fall of 2009.
- 2) Participate in the City's Regional Spill Committee.
  - MID Environmental and Port Environmental Affairs staffs continue to be active members of the City of Portland's Regional Spill Committee and attend quarterly meetings.

- 3) Participate in the Clean Rivers Cooperative.
  - The MID 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 36 reported spills during the 2008-09 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**

- 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 and MID staff modified the priority industrial facility list with respect to identified facilities subject to SARA on Port-owned property. During the 2008-09 fiscal year, one facility was subject to SARA but was sold in the winter of 2008. Therefore, there are no facilities on Port property subject to SARA.
  - The priority industrial facility inventory (developed in 2007-08) was modified to account for the sale of the one former industrial facility subject to SARA. Six priority industrial facilities were inspected in 2008-09.
- 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)
  - There are no facilities subject to SARA currently 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 six priority industrial facility inspections. The facilities include AWC Honda, Hyundai, International Raw Materials (IRM), Toyota, SSA, and Cereal Foods.
  - PDX Environmental and Property Management staff conducted industrial facility inspections at twelve facilities at PDX.
- 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)
  - PDX Environmental sent follow-up letters and copies of the inspection reports to the priority industrial facilities following inspections. Minor housekeeping issues were identified and documented but no major issues were identified.

- 1) Document the number of SARA and priority industrial facility inspections conducted annually.
  - MID Environmental conducted industrial facility inspections at six priority industrial facilities on MID property. PDX Environmental conducted industrial facility inspections at twelve priority industrial 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

- 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)
  - Six MID Properties Maintenance staff hold the Oregon Department of Agriculture pesticide applicator's license. 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. One PDX landscape maintenance staff is currently applying for a 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).
  - Eight MID Environmental staff participated in the eight hour HAZWOPER and Spill Incident Management Plan Refresher training in June 2009. During the Hazwoper training, the MID Spill Incident Management Plan and Port TRIP facility Spill Response Plan were also discussed.
- 2) Distribute updated emergency contact information and spill response procedures to employees responsible for responding to spills (Responsibility: MID Environmental).
  - There were no revisions to the Marine and Industrial Development Spill Incident Management Plans during fiscal year 2008-09. The spill reporting procedure is still posted throughout the marine terminals and staff offices.
- 3) Conduct general spill training annually for designated employees (Responsibility: MID Environmental).
  - MID Environmental staff conducted spill response training for designated spill response coordination staff. One training (July 2008) was focused on the spill and pager notification system, and one training (September 2008) was focused on spill response procedures.
  - MID Environmental staff conducted annual spill awareness training for designated staff at the following departments: MFM.

# BMP: Implement Education and Reporting Measures to Protect Stormwater Quality

- 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).
  - PDX Maintenance staff applied approximately 300 catch basin decals at PDX throughout the PDX industrial areas.
- 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 2008-09. 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 staffed and co-sponsored RiverFest, a community education and outreach event that focused on maintaining the health and improving water quality in the Willamette River.
- The Port was a financial co-sponsor of the following organizations/ conferences: Lower Columbia Estuary Partnership, Wetland Managers Wetland Association Conference, Oregon Trout, and Sustainable Northwest.

# 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.
- 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.
- The Port published their revised Stormwater Management Plan on their website as part of the MS4 NPDES Permit Renewal Submittal requirements.

# <u>Additional Activities (Staff Training and Education)</u>

- Environmental Affairs staff attended the Association of Clean Water Agencies (ACWA) annual conference. Many sessions are dedicated to stormwater and water quality issues.
- Environmental Affairs, MID Environmental, and PDX Environmental staff attended the Environmental Law Education Center Stormwater Management Conferences. Sessions focused on stormwater BMPs, legal issues, monitoring and technology.
- Members of Environmental Affairs staff additionally attended the Advanced Sediment Conference and the Willamette River Conference.
- Members of MID Environmental staff additionally attended the following meetings/ conferences that pertained to stormwater: Northwest Environmental Conference, NEBC

Luncheon on Oregon's Regulatory Approach to Stormwater; Spill Response and Mitigation Training (Seminar conducted by U.S Coast Guard and Portland Fire Bureau); Phase 1 ESA Practices for Commercial Real Estate; Aquatic Toxicology Workshop; and Hazard Recognition for Construction, General Industry, and Other Workplaces.

- 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.
- MID Environmental staff presented annual stormwater training for MFM personnel. The training covered topics such as stormwater regulations/BMPs and spill prevention.
- The Port developed a flyer outlining the Port's 2008-09 Environmental Objectives and Targets and distributed to Port stakeholders. One of the annual environmental objectives is to minimize impacts to water quality.
- The Port developed and implemented an internal EMS training course for staff. The Port's EMS system allows for documentation and tracking of various stormwater management efforts conducted by all Port operating areas.
- The Port staffed an outreach table at the Better Living Show, a sustainable lifestyle fair at the Portland Expo Center in March 2009. Community education efforts included a demonstration and discussion of native planting activities and invasive species management.
- The Port provides tours to the public at the marine terminals and PDX. Such tours reference activities conducted and facilities constructed to manage stormwater.
- The Port participated in the Columbia Slough Regatta.

# **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**

- 1) Maintain an inventory of all tenants (Responsibility: Environmental Affairs).
  - Environmental Affairs staff maintained a current inventory of Port tenants.
  - Environmental Affairs staff maintains an inventory of tenants holding NPDES permits issued 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 2008-09 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 conducts annual inspections of tenant facilities and provides technical assistance to tenants in regard to stormwater issues at their facilities. This fiscal year, MID Environmental assisted three tenants with stormwater related issues including spill prevention and recovery plans and addressing individual NPDES permit benchmark exceedances.
- 3) Coordinate stormwater BMP lease language between MID, Aviation (PDX), and Properties and Development Services (MID Environmental, PDX Environmental, Environmental Affairs).
  - Legal, Property Management, PDX Environmental, MID Environmental, and Environmental Affairs staff worked together to develop updated stormwater template lease language. Lease language is one mechanism to impose legal authority over discharges to the Port's MS4. Having a consistent approach helps streamline administration and improve environmental performance.
  - MID Environmental and PDX Environmental staff continued to be actively involved with the property managers in the development of specific 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 six tenant entry or exit inspections at PDX. Corrective actions were taken to remedy housekeeping issues.
  - In addition to the implementation of the industrial inspection program and annual tenant inspections, MID Environmental conducted two tenant exit inspections.

# **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 have 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**

- 1) Participate with agencies and groups on water quality issues (Responsibility: Environmental Affairs).
  - Port of Portland Environmental Affairs coordinated with the City of Portland and Multnomah County MS4 staff to discuss co-permittee operations and responsibilities as they relate to MS4 permit management. The Port is also an active participant in the Phase 1 subcommittee of the ACWA Stormwater Committee.
  - 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 Outreach Committee
  - Oregon Association of Clean Water Agencies
  - Willamette River Restoration Initiative
  - City of Portland Office of Healthy Working Rivers
  - City of Portland Watershed Science Advisory Committee
  - City of Portland Regional Spill Committee
  - Smith and Bybee Lakes Wetlands Management Committee
  - Lower Columbia River Fish Recovery Stakeholders Team
  - Maritime Fire & Safety Association
- 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 Bureau of Planning and Sustainability
  - 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).
  - No modifications to the IGA (updated in 2007) were necessary.