CITY OF PORTLAND
ENVIRONMENTAL SERVICES

1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204-1912 503-823-7740, FAX 503-823-6995 Dean Marriott, Director

August 31, 2000

Elliot Zais
Portland MS4 Project Manager
Oregon Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

Dear Mr. Zais:

On behalf of the City of Portland and its co-permittees, I am pleased to submit the enclosed *Annual Compliance Report No. 5*. This report fulfills reporting requirements for the City of Portland's NPDES Municipal Separate Storm Sewer System (MS4) Discharge Permit. It covers the work accomplished during the fifth fiscal year of the permit program (July 1, 1999 through June 30, 2000).

The report demonstrates the co-permittees' progress toward meeting the permit requirements and stormwater program goals this 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.

Please note that this report does not include the Monitoring Compliance Report. That report will be submitted separately at a later date.

A major activity during this permit year was preparation of the permit renewal for our second five-year permit term (September 1, 2000 through August 31, 2005). Using an "adaptive management" approach, each of the co-permittees conducted an internal process to review its existing stormwater management program and make appropriate adjustments for the second permit term. The co-permittees also discussed and coordinated the permit renewal process at a number of their monthly meetings. As required, the permit renewal was submitted to DEQ in February 2000. As we enter the second permit term, we are implementing the revised BMPs as described in the permit renewal.

Please call me at 823-7096 if you have any questions concerning this report.

Sincerely,

Patrice Mango

Patrice Mango
Portland Stormwater Program Manager
cc: Dave Kliewer (BES); co-permittees
Enclosure

City of Portland

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

Permit Number: 101314

ANNUAL COMPLIANCE REPORT NO. 5

Fiscal Year 1999-2000
(July 1, 1999 - June 30, 2000)

Prepared for:

Oregon Department of Environmental Quality

August 31, 2000

Submitted by:

City of Portland, Oregon
Multnomah County
Port of Portland
Multnomah County Drainage District No. 1
Peninsula Drainage District No. 1
Peninsula Drainage District No. 2

City of Portland
National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System Discharge Permit
Permit Number: 101314

ANNUAL COMPLIANCE REPORT
Fiscal Year 1999-00
(July 1, 1999 - June 30, 2000)

We, the undersigned, hereby submit this annual compliance report for the Municipal Separate Storm Water System Discharge Permit No. 101314, in accordance with Schedule B, Section 7 (System-Wide Report) 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

Larry F. Nicholas, P.E.
Director, Department of Environmental Services
Multnomah County

Mike Thorne
Executive Director
Port of Portland

Robert P. Groncznack
Director, Multnomah County Drainage District No. 1
Peninsula Drainage District No. 1
Peninsula Drainage District No. 2

Permit Holder Information

Co-Permittee:	City of Portland Bureau of Environmental Services
Address:	1211 SW Fifth Ave., Room 800, Portland, OR 97204
Contact Person:	Patrice Mango
Telephone No.:	(503) 823-5275

Co-Permittee:	Multnomah County Department of Environmental Services
Address:	1600 SE 190th St., Portland, OR 97233
Contact Person:	Larry Nicholas, Donna Hempstead
Telephone No.:	(503) 248-3355, (503) 655-4332

Co-Permittee:	Port of Portland
Address:	121 NW Everett, Portland, OR 97209
Contact Person:	Cheryl Koshuta
Telephone No.:	(503) 944-7236

Co-Permittee:	Multnomah County Drainage District No. 1
Address:	1880 NE Elrod Drive, Portland, OR 97230
Contact Person:	Robert Groncznack
Telephone No.:	(503) 281-5675

Co-Permittee:	Peninsula Drainage District No. 1
Address:	1880 NE Elrod Drive, Portland, OR 97230
Contact Person:	Robert Groncznack
Telephone No.:	(503) 281-5675

Co-Permittee:	Peninsula Drainage District No. 2
Address:	1880 NE Elrod Drive, Portland, OR 97230
Contact Person:	Robert Groncznack
Telephone No.:	(503) 281-5675

REPORT CONTENTS

EXECUTIVE SUMMARY

I. GENERAL INTRODUCTION

Permit Background
Specific Authorities and Requirements
Program Components
Program Coordination
Report Preparation and Organization
Figure 1: Map of Permit Area

II. CITY OF PORTLAND

III. MULTNOMAH COUNTY

IV. PORT OF PORTLAND

V. MULTNOMAH COUNTY DRAINAGE DISTRICT NO. 1
PENINSULA DRAINAGE DISTRICT NO. 1
PENINSULA DRAINAGE DISTRICT NO. 2

APPENDICES

A: City of Portland NPDES Stormwater Permit
B: Compliance Reporting Requirements
C: Permit Schedule Requirements (City of Portland)

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

This fifth Annual Compliance Report is submitted to the Oregon Department of Environmental Quality (DEQ) to fulfill reporting requirements for the City of Portland's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Discharge Permit (hereinafter referred to as the stormwater permit or permit). It covers the work accomplished during the fifth fiscal year (July 1, 1999 through June 30, 2000) of the permit program.

The report is submitted by the City of Portland and its five co-permittees: Multnomah County, Multnomah County Drainage District No. 1, Peninsula Drainage District No. 1, Peninsula Drainage District No. 2, and the Port of Portland. During permit year four, the Oregon Department of Transportation (ODOT) began the process of obtaining a statewide NPDES stormwater permit and, as a result, was not a co-permittee during permit year five.

The management and implementation of the permit program is a cooperative effort among the City of Portland's Bureau of Environmental Services (BES), other City bureaus, the co-permittees, DEQ, Metro, the Oregon Association of Clean Water Agencies (ACWA), other agencies, and the public.

The major components of the Stormwater Program include the following management practices:

Best Management Practices (BMPs) for new stormwater techniques:

- PI: Public Involvement
- ED: Public Education
- OM: Operations and Maintenance
- IND: Industrial/Commercial Controls
- ILL: Illicit Discharges Controls
- ND: New Development Standards
- STR: Structural Controls
- PS: Planning/System Preservation and Development

Existing Management Practices (EMPs), such as:

- Street sweeping
- Household hazardous waste collection
- Right-of-way revegetation programs, such as the "wildflower program"
- Erosion control inspection

- Watershed programs
- Environmental zones surrounding water resources as buffers to urban impacts

Required Management Practices (RMPs), which include:
- Program management
- Monitoring
- Annual compliance reporting

The Annual Compliance Report includes individual reports prepared by each co-permittee. Each report describes the activities implemented, program status, and any initiated or proposed program changes. An overview of each co-permittee's report is provided below.

CITY OF PORTLAND

During permit year five, the City of Portland implemented BMP activities in accordance with the City's Stormwater Management Plan and evaluated and revised the BMPs for the second permit cycle. To ensure consistency with City policies and programs that promote resource conservation and environmental protection, the City continues to coordinate Stormwater Program activities with other City actions and programs, such as the Sustainable Portland Commission, Integrated Watershed Planning, the Willamette River Predesign Project, and Combined Sewer Overflow (CSO) mitigation. Key activities and accomplishments are summarized below.

- Completed the NPDES municipal permit renewal submittal for the second permit cycle.

- Implemented citywide stormwater management standards for new development and redevelopment through the *Stormwater Management Manual* and revisions to City Code.

- Implemented the revised *Erosion Control Manual* and revisions to City Code to implement improved erosion control and construction site pollution prevention measures.

- Expanded the eco-roof program, including completion of two demonstration eco-roof projects, in partnership with Housing Authority of Portland and a private developer.

- Implemented the Green Building Initiative as part of Sustainable Portland Commission activities. The initiative is a two-year action plan for promoting resource-efficient and healthy building practices.

- Developed the Clean River Plan, which integrates the stormwater management and watershed/fish habitat enhancement efforts addressed under the Integrated Watershed Plan with basement flooding relief and CSO abatement.

- City Council authorized the development of a stormwater discount program for ratepayers who manage the quantity and quality of stormwater on their property. The program will provide a discount of up to 100 percent of the property component of the monthly stormwater management charge. Program criteria will set the highest financial incentive for facilities that manage the strictest standards for quality, volume, and flow controls.

- Purchased 17 acres of land in frequently flooded areas, using funds from Federal Emergency Management Agency (FEMA) and Community Development Block Grant flood mitigation programs, combined with BES and Parks Open Space funds.

- Continued public involvement/education activities as a significant element of the Stormwater Program. Key activities included the Naturescaping for Clean Rivers program; continued distribution of the *Clean Rivers: Why Should I Care?* videos; a variety of stormwater education activities; stewardship grant projects; ongoing participation in the Regional Coalition for Clean Rivers and Streams; and distribution of educational publications and materials.

MULTNOMAH COUNTY

Multnomah County implements a comprehensive stormwater management program county-wide with the goal of controlling water quality and quantity and reducing pollutants in stormwater runoff to the maximum extent practicable. This 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 success of the program is due to staff dedication to Best Management Practices (BMPs) required under the Act, regional enthusiasm for the effort, and continued support of managers and elected officials.

Multnomah County implemented the permit year five BMP activities according to the Stormwater Management Plan (SWMP). Permit year five focused on ensuring the principles outlined during last year's erosion prevention and

sediment control training were implemented. Implementation Team work sessions concentrated efforts on reviewing the Five-Year Program, developing new BMPs for the Five-Year Program, and incorporating additional practices protective of stream habitat. This year, the steelhead and salmon listings under the Endangered Species Act provided a catalyst for connecting the NPDES Stormwater Program and its direct impacts on our waterways and fish habitat areas. A workshop was held with the Stormwater Implementation Team to discuss the important interrelationship of the ESA with other water quality improvement programs.

Staff continued innovative projects, particularly the Road Maintenance functional group. That group initiated better erosion control methods for routine operations and continued to work with ODOT to utilize CMA application during anti-icing events. The Department of Environmental Services continued outreach efforts with participation on the Columbia Slough Watershed Council, the Johnson Creek Watershed Council, and active participation in the Regional Coalition for Clean Rivers and Streams, which will soon be merging with FISHCOM. For more detail on all these programs, see Section III of this Annual Compliance Report.

PORT OF PORTLAND

The Port of Portland (Port) owns or manages approximately 8,200 acres within the City of Portland Urban Services Boundary (USB). Port properties include the Portland International Airport (PDX), the Portland Ship Repair Yard (PSY), five Marine Terminals, including Terminal 6 (T-6), and five industrial parks. The Port implemented several new practices at these facilities related to stormwater management and the use of BMPs during the permit year. The Port also continued to improve and expand many of the existing stormwater programs included in the Municipal Storm Water Management Plan (MSWMP). A summary of the Port's 1999-2000 stormwater activities and BMP progress is provided below. Further details are provided in Section IV of this Annual Compliance Report.

In addition to the Municipal Permit, the Port also complied with several other NPDES stormwater permits during the 1999-2000 permit year. These permits included a 1200-Z industrial permit for T-6, a 1200-CA construction discharges permit for all Port properties, an anti-icing/de-icing waste discharge permit for PDX, and a construction dewatering discharge permit for PDX and the Portland International Center (PIC). In February 2000, PDX also switched from a 1200-T industrial permit for transportation activities to a 1200-COLS industrial permit, which incorporates the total maximum daily load (TMDL) for the Columbia

Slough. The operator of PSY, Cascade General, Inc., also complied with a 1200-Z permit for that facility.

Stormwater monitoring accomplished during the permit year included Industrial Permit compliance monitoring, dry season inspection monitoring, and BMP effectiveness monitoring. The industrial stormwater samples were collected from representative outfalls at PDX, T-6, and PSY. Dry-season monitoring was performed for the priority outfalls identified in the Port's MSWMP. BMP effectiveness monitoring was expanded from three to four structural BMPs, including 1) a Stormceptor® water quality manhole located at the PIC industrial park, 2) a series of StormGuard® catch basin filters located at PDX, 3) an oil/water separator located at T-6, and 4) a stormwater swale located near Ramsey Lake in the Rivergate Industrial Park.

During the permit year, the Port also reached an agreement with the City of Portland (City) on the performance of the land use characterization monitoring required by the municipal permit. Since the City already performs this monitoring for all areas within the USB, the Port is not required to conduct independent monitoring. In an agreement signed on August 5, 1999, the Port agreed to pay the City its percentage of the annual monitoring costs until 2005.

The Port Environmental Services Division (ESD) continued to provide stormwater policy and program direction to the Port operating areas throughout the permit year. Programs initiated in previous permit years, such as the Illicit Discharge Detection and Removal Program (IDDRP), MSWMP, and Tenant Program, continued to be implemented and expanded. ESD also furthered the development of a Port-wide Environmental Management System (EMS) and Environmental Management Information System (EMIS), including the establishment of a revised environmental policy that was adopted by the Port Commission. A draft water resources policy that addresses stormwater issues was also prepared as part of the EMS development. The Port also continued development of environmental plans for both riverbank and wetland management, areas that are often affected by stormwater management activities.

Port employee education during the permit year included educational meetings, information exchanges, and presentations designed to cover a variety of stormwater topics ranging from de-icing/anti-icing procedures to spill prevention and response to other environmental regulations. Educational and training events attended by Port staff included several events sponsored by the Association of Clean Water Agencies (ACWA) and the Portland Bureau of Environmental Services (BES) Erosion Control Manual training. All operating areas performed some degree of stormwater-related training during the permit year, with emphasis on employee awareness and pollution control. In addition

to specific training courses and guest speakers, Port facilities also continued to conduct regular staff and tenant meetings that included discussion of stormwater issues.

Progress was also made on the developing Port Tenant Program. Operating areas held regular tenant meetings where stormwater management issues and procedures were discussed. PDX further developed its BMP Committee program and used these monthly meetings to prepare and review the airport's updated Stormwater Pollution Control Plan (SWPCP) and to discuss the requirements of the new 1200-COLS permit. Progress also continued in the Marine Tenant Program, where seven new BMPs were developed and implemented. Port participation in public programs during the permit year focused on increasing public awareness of the importance of water quality protection. Program examples include a Columbia Slough revitalization effort on Port property, in cooperation with the City of Portland; several Stop Oregon Litter and Vandalism (SOLV) clean-up events; and activities with Headwaters to Oceans and the Willamette River Keepers. The Port also began participation in a joint watershed assessment project for the Columbia Slough Watershed. Intergovernmental coordination with the City and other co-permittees also continued throughout the permit year.

Each Port operating area performed routine maintenance of stormwater facilities and continued to develop and implement specific stormwater maintenance procedures and practices. Maintenance to structures such as stormwater catch basins, outfalls, and oil/water separators was conducted, and some revised practices were implemented. New maintenance procedures introduced during the permit year included the expansion of the PDX storm system inspection program, initiation of a PSY catch basin filtration system study, and installation of new equipment wash facilities at T-6. Various environmental management plans that address stormwater maintenance procedures were also revised, including the PDX SWPCP and the PSY Oil Spill Contingency Plan for Oregon and Oil Transfer Operations Manual. PDX, PSY, and T-6 also continued to update and revise their respective computer tracking systems for maintenance activities.

Developments with the anti-icing/de-icing program at PDX included limiting pavement de-icing to areas outside the PDX security fence, enforcing the previously developed "No Urea Policy," and continuing the De-icing and Anti-Icing Runoff Control Program for aircraft and airside pavements. A switch from potassium acetate to potassium formate for airside pavement de-icing also occurred during the permit year. The schedule for implementation of the fully integrated anti-icing and de-icing control system was adjusted to follow Option 2, as described in the permit. Additional progress included the compilation of

the data from the 1999-2000 de-icing season activities and pilot projects for submission to DEQ.

During the permit year, several structural stormwater controls and BMPs were installed and implemented at Port facilities. Some of these BMPs include:

PDX

- New toluene recovery system installed and in use
- New wash bay for maintenance equipment/vehicles completed and in use
- Erosion control training meetings conducted
- Contractor erosion control plans for construction project required and inspected
- Tenant BMP committee meetings conducted monthly
- New sweeper and catch basin waste containment system constructed and in use
- Stormceptors® and similar devices installed on PDX development projects
- Additional filters added to oil/water separators in parking garage

PSY

- Ship to Shore Transfer, Consolidation, and Management of Hazardous Materials BMP implemented
- Yard sweeping frequency increased

Marine Terminals

- Wash facility at T-6 downsized and diverted to the sanitary sewer system
- New oil/water separator added to T-6 equipment wash area
- New oil/water separator added at T-4, Berth 401
- Spill response BMP developed and implemented
- Emergency response procedure BMP developed and implemented
- Environmental reporting and record keeping BMP developed and implemented
- Waste management BMP developed and implemented
- Hazardous waste, universal waste, and used oil management BMP developed and implemented
- Hazardous materials management BMP developed and implemented
- Facility and equipment maintenance BMP developed and implemented
- Equipment and vehicle washing BMP developed and implemented

Industrial Parks

- Stormceptors® and similar devices installed on PDX development projects
- New gravel wash pad installed at properties maintenance facility
- Properties maintenance BMP implemented

In addition to the achievements discussed above, the Port also continued to implement BMPs for landscaping and maintenance, erosion and sediment control, and hazardous materials handling. Programs focused on illicit discharge control and the prevention of illegal dumping were also continued and expanded.

MULTNOMAH DRAINAGE DISTRICT NO. 1 (MCDD#1)
PENINSULA DRAINAGE DISTRICT NO. 1 (PENN1)
PENINSULA DRAINAGE DISTRICT NO. 2 (PENN2)

During permit year five, the drainage districts examined their role under the permit and determined they could fulfill this role effectively through memoranda of agreement (MOAs) among all the parties. As a result, they have proposed taking that approach, rather than continuing as a co-permittee, in the second five-year permit term. DEQ has not formally accepted this status change, pending review of the permit renewal; however, the drainage districts expect that DEQ will support the MOA concept as the appropriate vehicle for their participation. With this in mind, the drainage districts' Annual Compliance Report is the same as their report for last fiscal year (1998-99). As noted in last year's report, the districts are devoting considerable effort toward complying with the BMPs in the permit and are investing resources in new initiatives to improve water quality and habitat inside their jurisdictional boundaries. Progress on these programs is continuing on the track described in the 1998-99 Annual Compliance Report.

Section I

GENERAL INTRODUCTION

Section I
GENERAL INTRODUCTION

This fifth Annual Compliance Report is submitted to the Oregon Department of Environmental Quality (DEQ) to fulfill reporting requirements for the City of Portland's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Discharge Permit (hereinafter referred to as the stormwater permit or permit). It covers the work accomplished during the fifth fiscal year (July 1, 1999 through June 30, 2000) of the permit program. Figure 1 is a map of the NPDES stormwater permit area.

The report is submitted by the City of Portland and its five co-permittees: Multnomah County, the Port of Portland, Multnomah County Drainage District No. 1, Peninsula Drainage District No. 1, and Peninsula Drainage District No. 2. During permit year four, the Oregon Department of Transportation (ODOT) began the process of obtaining a statewide NPDES stormwater permit. As a result, ODOT was not a co-permittee during permit year five.

During permit year five, the drainage districts examined their role under the permit and determined they could fulfill this role effectively through memoranda of agreement (MOAs) among all the parties. As a result, they have proposed taking that approach, rather than continuing as a co-permittee, in the second five-year permit term. DEQ has not formally accepted this status change, pending review of the permit renewal; however, the drainage districts expect that DEQ will support the MOA concept as the appropriate vehicle for their participation. With this in mind, the drainage districts' Annual Compliance Report is the same as their report for last fiscal year (1998-99). As noted in last year's report, the districts are devoting considerable effort toward complying with the BMPs in the permit and are investing resources in new initiatives to improve water quality and habitat inside their jurisdictional boundaries. Progress on these programs is continuing on the track described in the 1998-99 Annual Compliance Report.

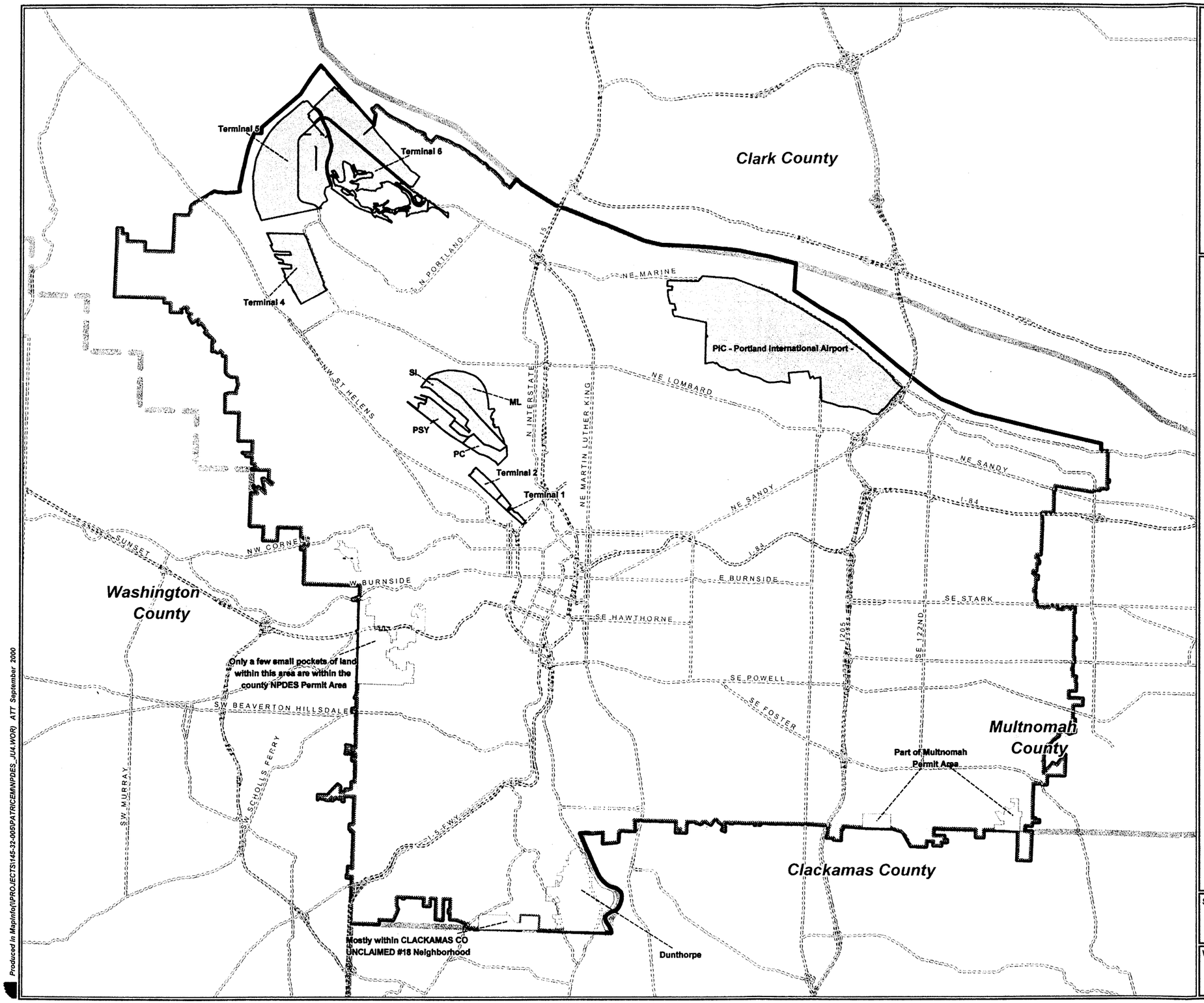
PERMIT BACKGROUND

The stormwater permit application process started in 1990. In compliance with the NPDES timeline for stormwater permitting, the co-applicants submitted Parts 1 and 2 of the application to DEQ in November 1991 and May 1993, respectively. In accordance with Section 402(p) of the Clean Water Act, DEQ issued the permit on September 7, 1995.

Figure 1

NPDES Stormwater Permit Areas

CITY OF PORTLAND
Bureau of Environmental Services



Legend

- Urban Services Permit Boundary
- City of Portland Permit Area
- Combined Sewer Area
- Port of Portland
- Mulnomah County Permit Area
- Storm Separated Area part of City of Portland Permit Area (Since Initial Permit)
- County Boundary
- Major Arterial Street

SHEET NO:	PRINTED:
1 OF 1	September 12, 2000

WORKSPACE:
\\PROJECTS\145-32-005\PATRICEM\NPDES_JU4.WOR

Produced in MapInfo(\\PROJECTS\145-32-005\PATRICEM\NPDES_JU4.WOR) ATT September 2000

SPECIFIC AUTHORITIES AND REQUIREMENTS

The permit incorporates by reference the Stormwater Management Plan submitted as part of the Part 2 permit application. Schedule B of the permit contains specific requirements regarding compliance reporting (referenced in Appendix B of this report). This Annual Compliance Report is in response to those requirements.

PROGRAM COMPONENTS

The major components of the Stormwater Program include the following categories of management practices:

Best Management Practices (BMPs) for new stormwater techniques:

- PI: Public Involvement
- ED: Public Education
- OM: Operations and Maintenance
- IND: Industrial/Commercial Controls
- ILL: Illicit Discharges Controls
- ND: New Development Standards
- STR: Structural Controls
- PS: Planning/System Preservation and Development

Existing Management Practices (EMPs), such as:

- Street sweeping
- Household hazardous waste collection
- Right-of-way revegetation programs, such as the "wildflower program"
- Erosion control inspection
- Watershed programs
- Environmental zones surrounding water resources as buffers to urban impacts

Required Management Practices (RMPs), which include:

- Program management
- Monitoring
- Annual compliance reporting

PROGRAM COORDINATION

The management and implementation of the permit program is a cooperative effort among the City of Portland's Bureau of Environmental Services (BES), other City bureaus, the co-permittees, DEQ, Metro, the Oregon Association of Clean Water Agencies (ACWA), other agencies, and the public.

Co-Permittee Coordination

The City of Portland (as lead co-permittee) and the other co-permittees actively participated in the 3-year planning process to develop the NPDES permit application and individual Stormwater Management Plans, which became the basis for the current permit conditions. The co-permittees began meeting monthly (or more often as needed) in May 1993 to provide detailed comments to DEQ's permit process and negotiate intergovernmental agreements. They have continued meeting monthly to share information about program implementation, BMP effectiveness, monitoring, and maintenance program activities. These regular meetings have helped the co-permittees implement their Stormwater Management Programs and coordinate projects such as the City's Industrial Discharge and Illicit Connection BMP efforts and participation in the Regional Coalition for Clean Rivers and Streams public awareness and education activities.

Coordination with Others

The co-permittees coordinated closely with other local agencies to develop the NPDES permit application and individual Stormwater Management Plans, and continue to rely on regional cooperative efforts to successfully fulfill some of the permit requirements. The co-permittees work closely with the regional government, Metro, to support programs that have a positive water quality benefit. Examples include the household hazardous waste disposal program (BMP ILL1) and development of the 2040 Plan, a plan related to regional growth that will have significant effects on the Stormwater Program as a whole.

Representatives from the City and the Port of Portland continue to actively participate in the Oregon ACWA Stormwater Committee to provide statewide coordination of stormwater permit implementation issues. Most Oregon agencies with NPDES stormwater permits are represented on this committee.

PERMIT RENEWAL

A major activity during permit year five was preparation of the permit renewal for the second five-year permit term (September 1, 2000 through August 31, 2005). In accordance with EPA policy guidance, the co-permittees used a streamlined "adaptive management" approach. The BMPs were improved, adapted, or reorganized as needed to achieve a program that collectively reduces pollutants discharged from the MS4 system in Portland to the maximum extent practicable. While many of the first-term BMPs focused on planning and development, the second-term program has a greater emphasis on implementation activities. Because the stormwater monitoring program was modified during the first permit term, no further modifications were included for the second permit term.

As required, the co-permittees submitted their permit renewal to DEQ in February 2000. As they move into the second permit term, the co-permittees are implementing the revised BMPs as described in the permit renewal.

REPORT PREPARATION AND ORGANIZATION

The BES stormwater management team has coordinated preparation of this Annual Compliance Report on behalf of the City and its co-permittees. In addition to the co-permittees, all affected City bureaus participated in the report preparation, most notably Water, Transportation/Maintenance, Parks, Planning and Development Review , Planning, and Fire. The individual reports prepared by these other City bureaus have been compiled into a single City of Portland report. For submittal to DEQ, the co-permittee reports have been combined into a single package with the City of Portland report.

This fifth annual report covers the period from July 1, 1999 through June 30, 2000. It includes activities that are a continuation of fourth-year activities. It does not repeat activities that were completed in year four (i.e., it is not cumulative).

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 overall permit background and regulatory information, program components, program coordination, and report organization, relevant to all of the co-permittees.

- **Sections II through V**--The individual compliance reports of the co-permittees, describing implementation actions taken, program status, and any initiated or proposed program changes.

- **Appendices**

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 Portland City Council and other interested parties with a Stormwater Program status overview. Detailed supporting information, such as inspection reports, logs, and individual correspondence, are archived at each permitted agency and are available to DEQ upon request.

Section II

CITY OF PORTLAND

CITY OF PORTLAND CONTENTS

	Page
INTRODUCTION	1
Program Organization and Coordination	1
Relationship to Other Water Quality Programs	2
City Budget and Funding	5
Cost –Effectiveness and Program Assessment	7
Activity Reports	8
BMP PI1/ED1	10
BMP OM1	16
BMP OM2	21
BMP IND1	26
BMP ILL1	32
BMP ILL2	35
BMP ND2	40
BMP ND3	42
BMP ND4	43
BMP ND5	48
BMP STR1	53
BMP STR2	57
BMP STR3	61
BMP STR4	67
BMP PSI	71
BMP PS2	75
EARLY ACTION PROJECTS	78

Section II
CITY OF PORTLAND

INTRODUCTION

This fifth Annual Compliance Report for the City of Portland documents activities that occurred during the fifth fiscal year (July 1, 1999 through June 30, 2000) of the permit program and evaluates the status of the Stormwater Program. Key accomplishments for FY 99-00 include:

- Completion of the NPDES municipal permit renewal submittal for the second permit cycle.

- Implementation of citywide stormwater management standards for new development and redevelopment through the *Stormwater Management Manual* and revisions to City Code.

- Implementation of the revised *Erosion Control Manual* and revisions to City Code to implement improved erosion control and construction site pollution prevention measures.

- Completion of two demonstration eco-roof projects, in partnership with Housing Authority of Portland and a private developer.

This introduction provides background information about the City's program organization and coordination, the relationship of the Stormwater Program to other water quality programs, relevant City budget and funding considerations, and program cost-effectiveness. Individual activity reports for each BMP (and related EMPs) and early action projects then follow.

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 February 2000, the City and its co-permittees submitted the permit renewal to DEQ for the second permit cycle.

Organization/Coordination within the City

BES's Stormwater Program Manager is responsible for overall project management, compliance reporting, policy development, and coordination within the City of Portland. All BES project planning is centralized within the Planning Group and organized by watershed to enhance project coordination. Stormwater Program activities in permit year 5 were implemented under BES's Integrated Watershed Planning (IWP) approach.

To coordinate Stormwater Program activities within the City, the Bureau Representatives Group meets on an as-needed basis. The Bureau Representatives Group meetings provide a forum for communication among bureaus to plan and ensure NPDES permit compliance. This group participated in additional focus team meetings for each BMP during permit year 5 to help develop the permit renewal and revise the Stormwater Management Plan.

In addition, Stormwater Program activities are being coordinated with the City's Sustainable Portland Commission. The Mayor appointed the commission to evaluate the City's internal environmental management practices and ensure consistency with policies and programs that promote resource conservation and environmental protection. During permit year 5, the City implemented the Green Building Initiative as part of Sustainable Portland Commission activities. The initiative is a 2-year action plan for promoting resource-efficient and healthy building practices.

RELATIONSHIP TO OTHER WATER QUALITY PROGRAMS

Although not all the following activities are specifically required as part of the NPDES permit, they are closely associated with the Stormwater Program and related to stormwater quality.

Combined Sewer Overflow Reduction

The City is actively implementing activities to eliminate sanitary sewage overflows to the Willamette River and Columbia Slough. Formerly under a separate Combined Sewer Overflow (CSO) Program, these activities were integrated in permit year 4 into the Willamette River Predesign Project and Columbia Slough Watershed Program through the IWP. These activities include a combination of roof drain disconnects, sump installation, hard-piped structural control solutions, and wet-weather treatment plant facility construction. Part of the CSO abatement strategy includes separation of combined flows in some areas and evaluation of water quality treatment alternatives for the resultant separated stormwater flows. In addition, the City is integrating approaches to address

combined sewer overflows with other programs. During permit year 5, the City developed the Clean River Plan, which integrates the stormwater management and watershed/fish habitat enhancement efforts addressed under the Integrated Watershed Plan with basement flooding relief and CSO abatement.

Willamette River Predesign Project

The Willamette River Predesign Project was initiated during permit year 2 to re-assess long-term community values and ensure that broad water quality issues are addressed in the Willamette River portion of the CSO Facilities Plan. The Predesign Project includes evaluating innovative "green" technologies, such as infiltration ponds, rooftop stormwater detention, bio-infiltration swales, and vegetated buffer strips to reduce stormwater runoff and improve water quality. The planning and cost-effectiveness analyses for the green solutions and in-flow control, as well as the development, calibration, and execution of hydraulic and pollutant models for existing conditions, were completed during permit year 3. Using these data, 48 potential sites were identified in permit year 4 for green solution implementation.

In permit year 5, the City evaluated 11 of the 48 sites as part of a basement flooding relief predesign in the Taggart B, C, and D sewer basins. After evaluating the 11 projects for cost-effectiveness relative to needed local pipe improvements, just one project was recommended for implementation.

The remaining 37 projects will be evaluated as part of other engineering predesigns as they occur. In permit year six, 12 of the green solution projects in the Holladay, Stark, and Sullivan Basins will be evaluated for benefits to local basement relief projects as well as Willamette CSO facilities. As part of the Clean River Plan, the City will also conduct an area-wide assessment of the potential for green solutions that provide multiple benefits in the three basins, including basement flooding relief and CSO abatement.

Public Facilities Plan

During permit year 4, BES completed the Public Facilities Plan (PFP). Last updated in 1987, the PFP historically focused on infrastructure issues such as pipe conveyance and wastewater treatment system capacity. To incorporate broad water quality and stormwater issues, the current PFP includes evaluating retrofits to existing facilities to reduce stormwater pollutants and assessing channel and riparian zone resources. These assessments are of critical importance in determining and proactively mitigating the stormwater-related impacts of increased urban density, as part of the City's current planning efforts to meet the requirements of Metro’s Stream and Floodplain Protection Plan (Title

3), as well as BES's Integrated Watershed Planning. The Public Facilities Plan also integrates and institutionalizes elements of the IWP effort.

Watershed Programs

During FY99-00, the City of Portland continued implementing watershed programs in the Columbia Slough, Johnson Creek, Fanno Creek, Balch Creek, Tryon Creek, and Willamette River. The Willamette River watershed focuses on Balch Creek, streams draining to the Willamette that are not currently addressed under a separate program (i.e., Stephens Creek), and areas affected by the Willamette River Predesign Project. During permit year 5, BES continued implementation of Integrated Watershed Planning to stress comprehensive, multi-objective watershed management along geographical boundaries, coordinating the various jurisdictional and public interests within those areas.

Because of high public interest in the health of Portland's watersheds, public participation is an important element of watershed planning and implementation. During FY99-00, the City actively participated on watershed councils for the Columbia Slough, Johnson Creek, and Tryon Creek. In addition, the City fosters citizen stewardship through its Community Watershed Stewardship Program. In fiscal year 99-00, this program provided ten grants totaling $33,960 to citizen groups to conduct water resource enhancement projects in their watersheds.

Endangered Species Act

Water quality improvement and protection are critical objectives in establishing watershed priorities. These objectives have been heightened by the National Marine Fisheries Service's (NMFS) March 1998 listing of steelhead trout as a threatened species under the Endangered Species Act (ESA), the listing of chinook salmon as a threatened species in March 1999, and the passage of Metro's Stream and Floodplain Protection Plan (Title 3).

The ESA listings apply to the Lower Columbia River evolutionary significant unit. The affected area includes the Willamette River and its tributaries, upstream to Willamette Falls. Within the NPDES permit area, the main problems include water quality and habitat degradation, habitat loss, and fish passage blockage by structures such as culverts. Altered streambank flows, loss of spawning gravels, and sedimentation all negatively affect spawning habitat. Decreased water oxygen, increased temperatures, bacteria, nutrients, pH, and toxic contaminants are all water quality parameters that can also negatively impact fish. In 1996, DEQ listed the Willamette River, Johnson Creek, and Tryon Creek as "water quality limited" for these parameters. Many of these parameters can be linked to increased stormwater runoff from urbanization and related decrease in water quality. This, in turn, results

in increased sediments and associated contaminants of concern (bacteria, toxics, nutrients, and biochemical oxygen demand). The Stormwater Program activities closely relate to ESA goals by implementing BMPs that will mitigate stormwater quantity impacts and improve water quality. In permit year 5, the Stormwater Program continued coordination with City ESA staff on program activities related to fish impacts, and participated on ESA program advisory committees.

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.

CITY BUDGET AND FUNDING

The annual City of Portland costs for program administration, planning, development, program monitoring, public education and outreach, and demonstration project implementation (Parkrose Pilot Project) have averaged approximately $635,000 annually through year 5 of the permit period. For the same time period, related City Stormwater Program activities have averaged $1 million per year for watershed planning and $3 million per year for capital project implementation (e.g., Columbia Slough Whitaker Pond stormwater outfall treatment facility)

Because of the integral nature of the Stormwater Program with the City's normal operating functions, other costs related to implementation of the program are very difficult to quantify. Stormwater programs are primarily financed by City stormwater management charges. Utility revenue bonds and stormwater system development charges are used to financed stormwater capital projects.

Stormwater Management Charges

City Council approves revised stormwater monthly fees and stormwater system development charges (SDC) at the start of each fiscal year. Monthly 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 all five permit years:

	Year 1	Year 2	Year3	Year4	Year 5
Single Family Residential Charge	$5.26	$6.07	$6.89	$7.82	$8.78
Rate per 1,000 SF of Impervious Area	$2.19	$2.53	$2.87	$3.26	$3.66

At the close of the fifth permit year, City Council increased monthly rates from $3.66 to $4.17 per 1,000 square feet of impervious surface, which translates to an increase from $8.78 to $10.01 per single-family residence per month. In addition, the Council authorized the development of a discount program for ratepayers who manage the quantity and quality of stormwater on property. The program will provide a discount up to 100 percent of the property component of the monthly stormwater management charge. BES is developing program criteria that will set the highest financial incentive for facilities that manage the strictest standards for quality, volume, and flow controls. BES proposes to give particular value to facilities that use vegetated surface infiltration.

Stormwater System Development Charges

Formerly based on impervious area, the methodology for assessing system development charges for new development and significant redevelopment was revised in permit year 3 to include two components. One component represents the charge for stormwater facilities that handle runoff from individual properties. For permit year 5, this onsite portion was assessed based on $110.56 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 5, the rates were $1.09 per linear foot and $0.44 per vehicle trip. At the end of permit year 5, the City Council revised these rates to $96.43 per 1,000 square feet of impervious area, $2.50 per linear foot of frontage, and $0.97 per 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.

A few stormwater projects are funded by federal programs. The Columbia Slough Watershed Program implemented a number of stormwater-related measures using funds from the EPA Slough revitalization grant of $10 million. The grant was extended; permit year 5 was the last year of the grant. In 1997, the Johnson Creek Watershed Program received over $2.25 million from the Federal Emergency Management Agency (FEMA) and Community Development Block Grant flood mitigation programs. Using funds from this program, combined with BES and Parks Open Space funds, 17 acres of land in frequently flooded areas were purchased in permit year 5.

COST-EFFECTIVENESS AND PROGRAM ASSESSMENT
(How Well Has the Program Worked?)

The numerous groups participating in program implementation, the integration of stormwater activities throughout the City, and the coordination with the Integrated Watershed Planning effort result in cost-effective benefits. Indicators of success include:

- Stormwater Program staff researched innovative national and international stormwater management technologies, such as eco-roofs, and compiled a resource compendium of projects, designs, and vendors. Based on this research, the City is implementing these innovative technologies in partnership with local businesses and agencies.

- With little investment of public resources, the *Naturescaping for Clean Rivers* program continues to successfully help homeowners and commercial and industrial facilities integrate stormwater management into landscaping.

- The City's Downspout Disconnection Program disconnected 1,710 homes from discharging to combined sewers in permit year 5. The Willamette River Predesign green solutions task is developing a similar program to promote stormwater retrofits at existing commercial properties.

- Since its inception in 1994, the Watershed Stewardship Program has granted at least $30,000 per year, leveraging an average of several times that amount in volunteer and in-kind services from organizations, schools, and citizens for water quality projects. For permit year 5, the community added $127,200 from in-kind donations and volunteer labor, a ratio of about four to one.

- Stormwater permit requirements have been incorporated into all bureau projects through integration into BES's Integrated Watershed Planning activities and capital project criteria.

- BMPs are tested and monitored before their citywide implementation through pilot projects such as Parkrose, the BES Water Quality Laboratory (swales), and watershed projects (Balch Creek, Johnson Creek--Brookside) to help ensure facility efficiency and cost-effectiveness.

- Increased coordination with watershed activities, such as monitoring, has provided the Stormwater Program with additional data at no extra program cost.

- Continued collaboration with the Oregon Association of Clean Water Agencies (ACWA) has provided shared resources and information and prevented duplication of efforts (e.g., monitoring, permitting) among the state's permitted municipalities.

- The City has formed collaborative partnerships with many nonprofit, government, and academic institutions to investigate and implement innovative, cost-effective stormwater management strategies. These institutions include the University of Oregon, Oregon State University, Portland State University, Oregon Graduate Institute, Oregon Department of Transportation, DEQ, Multnomah County, and Metro.

ACTIVITY REPORTS

The following pages summarize the status of the various program activities, including BMPs, EMPs, and early action projects.

For each BMP, the following information is provided:

- The BMP identifier (e.g., PI1/ED1) and title.

- The BMP description from the Stormwater Management Plan.

- The desired outcome.

- Key accomplishments for permit year 5. This section describes the year's activities and notes any significant changes/improvements from year 4. It also compares how actual year 5 activities compare with projected year 5 activities, as predicted in the last annual compliance report. Finally, this section notes the compliance status of this BMP in relation to permit schedule requirements. (See Appendix C for a summary of schedule requirements.)

- The status of related EMPs (in their form from the Stormwater Management Plan). This section focuses on noteworthy accomplishments or changes in

existing practices. Where no specific text is included, no changes from the approach or practices shown in the original Stormwater Management Plan have occurred.*

- Challenges and solutions.

- Potential modifications to the NPDES permit.

- Projected major accomplishments for next fiscal year (2000-2001).

---

* EMP(iv) applies generally to all of the activity areas. As it is shown in the Stormwater Management Plan, it includes the following description and major headings:

Proposed Management Program shall include a comprehensive planning process which involves public participation...to reduce pollutants,...control techniques and systems,...and such other provisions which are appropriate.

- Clean Rivers Program
  - Drainage and Stormwater Quality
  - Combined Sewer Overflow (CSO) Reduction
  - Public Education and Involvement
- Industrial Control Programs
- Solid Waste and Recycling Programs
- Public Facilities Management
- Smith and Bybee Lakes Management Plan
- Development Controls
- Light Rail Project
- Bi-State Lower Columbia Water Quality Program
- Carbon Dioxide Reduction Strategy
- SOLV
- State Toxic Material Reduction Act
- Land Use Plan District Planning
- Urban Forestry
- Livable Cities Planning Project
- Reclaiming Our Streets
- Skinny Streets Program
- State Transportation Planning Rule

Many of these program areas are addressed individually in the activity reports that follow.

PI1/ED1	Develop a comprehensive public involvement and education program

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Develop a comprehensive stormwater/watershed public participation program.

Develop a comprehensive stormwater/watershed education program.

DESIRED OUTCOME(S)

Actively engage Portland's citizens in improving water quality by reducing stormwater pollution.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

Naturescaping for Clean Rivers

Continued *Naturescaping for Clean Rivers* residential program, in partnership with the East Multnomah Soil and Water Conservation district (EMSWCD). Activities included:

- Conducted seven 4-hour workshops, with 147 participants. The workshops encompassed all Portland watersheds: Columbia Slough, Johnson Creek, Tryon Creek, Balch Creek, and Willamette River. In addition, 30 participants attended 3 follow-up mini-workshops and tours.

- Co-sponsored with Metro a first annual tour of natural gardening techniques. A total of 800 participants attended one or more of the 17 sites.

- Disseminated information and messages through a wide variety of venues, reaching thousands of citizens. Twenty-five staffed booths and/or presentations reached 3,000 individuals. These included: 1) presentations at community meetings (neighborhood associations, watershed councils, friends groups, garden clubs), 2) presentations at regional conferences, and 3) display booths at fairs and community events. Approximately 11,000 households were reached through dissemination of brochures, flyers, and e-mail messages. Twenty thousand were reached through local radio

announcements, news stories, a bill stuffer, presentations to community organizations, and staffed informational booths at local events.

- Disseminated brochures and program information to 5,000 households through the City's Downspout Disconnection Program. In addition, 20,000 households were verbally informed about Naturescaping concepts through the door-to-door effort of the Downspout Disconnection Program.

- Distributed 200 trees at a neighborhood event through the Friends of Trees organization.

Nontraditional Activities

- Used over 650 volunteers, representing 82 community organizations from North and Northeast Portland (Columbia Slough Watershed), to help disconnect 2,900 downspouts.

Education Videos

- Continued to distribute the *Clean Rivers: Why Should I Care?* (Volume I) music/education video used as an outreach tool to nontraditional audiences as well as to all Portland middle and high schools. This fiscal year, Volume I was distributed to 16 teachers, groups, and individuals. The "Discovery Packet" of related educational activities was also distributed to eight teachers.

- Continued distribution of the *Clean Rivers: Why Should I Care?* (Volume II video project ("Leo's Wake Up Call") and the "Discovery Packet" of related educational activities.

Stormwater Education Activities

- Reached approximately 26,871 students (grades K-12) with the "Clean Rivers Education Program," providing hands-on, interactive science education focusing on stormwater issues. Program options include:

  - Classroom presentations: *Watershed Awareness, Stormwater Storytelling, Riparian Restoration, How to Help the Fish, Stream Bugs Tell it All, Water Quality Testing in the Classroom, Combined Sewage Overflow (includes downspout disconnect information)*

  - Field trips: *Willamette River Boat Tours, Investigating Urban Steams/Wetlands*

- School Special Stewardship Projects: *School stream restoration adoption projects: involved four schools in the Willamette Valley in planting and maintenance of streamside properties with native plants*

- Assembly Programs: *Mike a Ripple, Make a Wave Assembly*

- Adult Workshops: *Getting out of Muddy Waters Workshop (erosion control focus), Streamsider Workshops in Fanno Creek and Tryon Creeks; Rain, Drains and Automobiles workshop in Columbia Slough, and Portland State and Portland Community College classes*

- Festivals: *Stormwater Obstacle Course checkouts, Procession of the Species Earth Day Parade, Whitaker Ponds Festival*

- Provided a 3-D watershed model for use by the Friends of Tryon Creek State Park.

- Provided checkout of storm drain stenciling materials to the community, resulting in 835 volunteers stenciling 4,060 storm drains.

- Checked out curriculum kits to Portland teachers. The kits include books, suggested science activities, and the *Clean Rivers: Why Should I Care?* videos. Two checkout kits were created, one for elementary students and one for middle school. Checked out to 18 teachers, reaching 613 students.

Stewardship Grant Projects

- Provided stewardship grants to:

  - Bridlemile Neighborhood Creek Stewards Restoration Projects
  - Friends of Trees for Oaks Bottom Restoration
  - Grant High School Bioswale Project
  - Hayhurst School Naturescaping Project
  - Heron Pointe Willamette River Restoration Project
  - Madison High School Naturescaping & Eco-Summit Project
  - Errol Heights Wetlands Restoration
  - Saturday Academy Native Tree Project
  - Sustainable Community NW Bioswale Project
  - Friends of Tryon Creek Ivy Removal Project

Education Advisory Committee

- Continued monthly Education Advisory Committee meetings to review and advise on public participation approaches and activities.

Regional Coalition for Clean Rivers and Streams

- Continued participation in the Regional Coalition for Clean Rivers and Streams, made up of four agencies (which also represent all of their participating co-permittees): City of Portland, Unified Sewerage Agency, Clackamas County, and City of Gresham. Developed and implemented a public awareness campaign, including printed ads in regional newspapers and radio ads. Packets of brochures were available to those who called a "hot line" for more information. The Coalition also worked with other agencies to bring them into the group and began work on a new logo and Interagency Agreement.

Publications

- Developed popular "Wanted: Dead English Ivy!" brochure with Portland Parks and Urban Forestry Commission. To date, 16,000 have been printed, with 11,000 of those distributed.

- Distributed educational materials at community meetings and events.

Note: Public education and involvement activities are also cited under other BMPs where appropriate and under the Parkrose Pilot Project early action project.

Significant Changes/Improvements from Year 4

None

Comparison with Projected Accomplishments

The projected accomplishments for fiscal year 1999-00 identified in the fourth annual compliance report (September 1, 1999) were achieved, with the following exceptions:

- Formation of a program-wide public advisory committee: This fiscal year, as well as last, focused on public input for the Stormwater Management Manual.

- "Stormwater Runoff," a walk/run fun event in and around downtown Portland/the Willamette River: Deferred, pending availability of funding and staff resources.

- *Taking Care of Your Watershed* guidebooks (finalize and distribute for Fanno, Balch, and Tryon Creek): Deferred to FY 00-01 due to limited staff resources.

- Working with the Office of Neighborhood Involvement (ONI) to identify opportunities for joint materials and activities: Deferred due to limited staff resources.

Compliance Status

On schedule

RELATED EMP STATUS

<u>EMP (B)(5)</u>

". . . a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or water quality impacts. . ."

Illicit Discharge and Public Response
(Also see ILL1 and ILL2)

Neighborhood Cleanup Program

- Sponsored 52 neighborhood cleanups funded through donations to neighborhood coalitions to coordinate neighborhood, street, and illegal dumpsite cleanup events with the 95 recognized neighborhood associations. A total of 4,168 homes participated in neighborhood cleanups, with involvement by 970 volunteers. Volunteers assisted 294 seniors and mentally and physically challenged citizens in yard and home cleanup.

- Continued the second year of a 2-year $300,000 contract with a non-profit community-based neighborhood coalition for the bulky waste door-to-door collection program.

<u>EMP (A)(6)</u>

"…reduce to maximum extent practicable (MEP) discharges from MS4s of pesticides/herbicides/fertilizers (p/h/fs)…"

The City and Metro no longer partner on the Alternatives to Pesticides program because of budget reductions. Alternatives to pesticides are a focus of discussion and learning for the *Naturescaping for Clean Rivers* program.

CHALLENGES AND SOLUTIONS

Continued budget and staff reductions and reorganization provide constraints for public education and involvement, including nontraditional outreach.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. During the first permit cycle, the City found that activities covered under BMPs PI1, ED1, and ND2 had numerous overlapping elements. Since these BMPs all include activities related to various aspects of public participation, they were combined into one BMP (PI1) for the second permit term. The activities covered include public information, education, involvement, and stewardship.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Continue with development of the non-residential element of the *Naturescaping for Clean Rivers* Program.

- Continue the successful adult Streamsider workshops.

- Finalize and distribute the Balch Creek and Tryon Creek *Taking Care of Your Watershed* guidebooks.

- Develop a Homeowner Stormwater Improvement Handbook.

OM1	Develop an operations and maintenance plan for public stormwater controls and evaluate existing practices

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Develop an operations and maintenance (O&M) plan for public stormwater quality structural controls and evaluate existing stormwater maintenance practices that affect water quality.

DESIRED OUTCOME(S)

Evaluate and revise, if appropriate, operations and maintenance practices for public structural stormwater controls to reduce pollutant discharges.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Adopted target service-level standards for inspecting and cleaning stormwater collection and transportation facilities, including sumps and sedimentation manholes, inlets and catch basins, trash racks, culverts, and ditches. As a result, a seventh vactor crew was requested and approved for the FY 00/01 budget year. This crew will clean an additional 400 sumps and sedimentation manholes and 2,000 inlets and catch basins.
- Completed construction of a second sediment dewatering pad and began operation. Decreased the cleaning cycle for sumps and sedimentation manholes by one-third, from 15 years to 10 years. Increased sump and sedimentation manhole cleaning by 50 percent (from 932 to 1,412). Implemented enhancements to treat the decant to remove a higher percentage of fine suspended solids prior to discharge to the sewer system..

- Completed a preliminary alternatives analysis to identify feasible options for sediment management. Promising options include constructing satellite field decanting stations, adding flocculent to the decant, constructing additional sediment dewatering facilities at new locations, and adding flocculent to the vactor tanks.

- Completed an intensive facility and material research project for stormwater management efforts. Decided on overall site evaluation at the Bureau of Maintenance Stanton Yard rather than BMP-specific maintenance.

- Substantially increased the base of background data on contaminants in sediment collected from Portland stormwater facilities.

- Conducted a pilot trial of *in situ* bioremediation at an open pond pollution reduction facility that had been subject to a minor spill of heavy petroleum products.

- Upgraded the Wastewater Collection Management System database to the latest version to track maintenance efforts and conditions of facilities.

- Continued work on the Storm and Sanitary Quality Assurance Clearinghouse (SaSQUACH) to reconcile information between maps and the database.

- Condition Assessment Team inspected 3,500 sumps and sedimentation manholes to document the condition of the facility, note the need for repairs, and measure sediment depth.

- Established two dedicated Planner/Scheduler positions to develop and implement preventative maintenance schedules for all sewer and surface stormwater facilities.

Significant Changes/Improvements from Year 4

- Adoption of target service-level facility maintenance standards provides a means to assess current service levels and identify activities that need additional attention and/or resources. These assessments led to recommendations for organizational changes, operational enhancements, and funding increases to improve the level of stormwater facility maintenance.

- Completion and start-up of a second sediment dewatering pad supported a 50 percent increase in sump and sedimentation manhole cleaning. The increased sediment dewatering capacity provided the opportunity to experiment with alternative dewatering approaches such as adding flocculent to the decant prior to discharge.

- Partnered with ODOT and DEQ in research and development activities, including field trials of promising management methods, to support the Federal Highway Administration (FHWA) funded ODOT "Roadwaste Management Options" project.

Comparison with Projected Accomplishments

- Postponed the decision about combining O&M BMPs to the next permit cycle.

- Decided to delay development of watershed-specific operations and maintenance plans until other elements of watershed management plans and critical fisheries sites have been identified.

Compliance Status

The final O&M plan for water quality facilities is in progress, and implementation of improved practices will occur as evaluations are completed and the additional work is budgeted.

RELATED EMP STATUS

<u>EMP (A)(1)</u>

"*... maintenance activities and schedule for structural controls...*"

<u>EMP (B)(7)</u>

"*Description of controls to limit infiltration of seepage of sanitary sewers to MS4...*"

The following categories of activities addressed the above EMP elements: stormwater passive treatment facilities, swales (biofiltration), ditches, detention ponds and road-crossing culverts, trash racks, sumps, catch basins, subsurface sanitary disposal control, standard design specifications, inflow and infiltration, and animal waste control. Ongoing maintenance activity for the following types of facilities is based on emergency need only, with a small amount of routine maintenance. The noteworthy accomplishments and/or changes within those EMPs are:

- Repaired or constructed 150 inlets, 2,000 feet of inlet lead, 170 sumps, 10,000 lineal feet of culvert, and 60 trash racks.

- Inspected approximately 3,500 sumps and sedimentation manholes; cleaned approximately 1,400 sumps and sedimentation manholes, 18,000 catch basins, 1 swale, 40,000 feet of ditch; removed 100 cubic yards of material from detention ponds; inspected and cleaned 3,200 trash racks; made 19,000 maintenance visits to various locations (multiple visits to some locations after major rain events).

- Approved repair of six existing cesspools within the USB.

- Multnomah County Health permitted 44 new specified animal permits and responded to 98 complaints on those permits, as well as 100 animal waste/odor control calls.

CHALLENGES AND SOLUTIONS

As budgets shrink and new facilities are added, we are challenged to provide increased and improved maintenance to support our water quality goals in an environment where competition for funding is very intense. New funding mechanisms and/or reprioritizing existing funding sources will be needed to adequately maintain all existing and new water quality and quantity control facilities and other parts of the sewer collection system. One solution the City is using is condition assessment to identify region- or facility-specific maintenance schedules. The newly upgraded database will enable more comprehensive planning and scheduling of all maintenance work.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. During the first permit cycle, the City inventoried stormwater facilities within the urban services boundary and reviewed maintenance practices for these facilities (OM1). This BMP has been revised to focus on improvement and effectiveness testing of public facility maintenance practices. In addition, two new BMPs have been established: one to address operations and maintenance practices at City-owned facilities that conduct industrial/commercial-type activities (OM3), and one for other City operations and maintenance practices that can contribute non-stormwater discharges to the MS4 (OM4).

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Complete a secondary sediment measurement pass on sediment manholes and sump facilities.

- Complete facility maintenance workplan to request further funding and staffing on condition assessment and water quality efforts.

- Complete Sediment Management Operations Plan and determine optimal methods for increasing sediment processing capacity.

- Continue materials and product research and monitor at least two products, facilities, or activities per year, as budget allows.

- Complete identification of methodology that will be used to create and maintain watershed-specific operations and maintenance plans.

- Continue research on new and improved practices for inclusion in the Stormwater Maintenance Management Manual.

- Obtain capital funding for construction of a third sediment dewatering facility.

OM2	Evaluate operations and maintenance activities for public rights-of-way

STORMWATER MANAGEMENT PLAN DESCRIPTION (S)

Evaluate operations and maintenance (O&M) activities for public rights-of-way to determine water quality impacts. Recommend improved procedures or practices that reduce the discharge of pollutants to the stormwater system.

DESIRED OUTCOME(S)

Evaluate and, where appropriate, revise operations and maintenance practices for public rights-of-way in order to reduce pollutant discharges to the storm sewer system.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Various Bureau of Maintenance (BOM) and Office of Transportation (PDOT) teams (Pollution Prevention, Administrative Management, and Water Quality Management) continue to meet and use an adaptive management approach for ongoing development, implementation, evaluation, assessment, and revision of the OM2 water quality program. Following staff transitions, the Water Quality Management team (which guides water quality direction, including OM2 and Endangered Species Act initiatives) is being restructured.

- BOM is using involvement in water quality teams to emphasize the bureau's commitment to environmental issues and to raise the level of employee environmental awareness and support for system changes.

- The "runoff management" principles developed early in the permit cycle were used to proactively address non-traditional erosion and sediment control issues. This permit year, innovative trials, new mechanisms and materials were developed and implemented. These non-traditional runoff management principles became part of the erosion control policy developed under ND4. They include leak containment, runoff from activities, and disturbance of work surfaces and soil.

- Testing continues for supplies and components of runoff management and leak containment kits. This testing process has eliminated several products and practices that proved to be impractical. For example, actual filtration of channel flow proved to be impractical at this stage, but new products and

processes have been identified and implemented for use as check dams; "drip pans" have been replaced with an oil absorbent geotextile that sheds water. Some existing erosion control products have been adapted to runoff management situations.

- The Pollution Prevention (P2) team and Administrative Management team have continued to pilot test the efficacy of new or revised materials, practices, and activities and to monitor runoff management programs and pilot projects. They continue to provide an effective bridge between field operations and management, and to support the application of awareness training principles to field operations. For example, pilot testing on inlet inserts resulted in trapping up to one-half cubic yard of sediment per day from grinding operations.

- A draft update of the OM2 evaluation and work plan has been completed. Staff changes, Endangered Species Act direction, and NPDES MS4 permit renewal have complicated this process.

- The "skill training" concept is evolving to include technical support for field activities.

- Field testing of runoff management kit materials continues.

- Work continues in coordinating Endangered Species Act (ESA), Clean Water Act (NPDES MS4), and other environmental mandates.

Significant Changes/Improvements from Year 4

Awareness-level training was offered to support staff and all field crews, and erosion control training was provided for supervisors, lead workers, and craftspeople. The number of transportation employees who have received awareness training has increased to 272, while 127 transportation employees have attended a special 4-hour erosion and sediment control training program developed for field employees.

Comparison with Projected Accomplishments

Evaluation of practices and pilot testing improvements to practices are in line with projections in the "Stormwater Management Plan" and the OM2 work plan for implementing improvements to practices.

Compliance Status

In compliance with all permit dates.

RELATED EMP STATUS

EMP (A)(1)

"... maintenance activities and schedule for structural controls..."

EMP (A)(3)

"...a description of practices for operating and maintaining public streets, roads, and highways and procedures for reducing the impact on receiving waters ...including deicing..."

The following categories of activities addressed the above EMP elements: street cleaning and roadside maintenance, street repair and paving, sewer cleaning and repair, traffic maintenance, structures maintenance and repair, and sidewalk repair. The noteworthy accomplishments and/or changes within those activities are:

- ESA and funding issues continue to impact sometimes-competing objectives within maintenance programs. The City continues to work with the Oregon Department of Transportation, Federal Highway Administration, and other operating bureaus and regulatory agencies to balance environmental needs with other community priorities.

- The Bureau continues to work with experimental plantings, using an integrated vegetation management (IVM) approach, and requiring certification of pesticide applicators. This approach is designed to minimize needs for fertilizers, pesticides, and irrigation, while developing and maintaining viable landscapes.

CHALLENGES AND SOLUTIONS

The City continues to work with experimental plantings, using an integrated vegetation management (IVM) approach, requiring certification of pesticide applicators. This approach is designed to minimize needs for fertilizer, pesticides, and irrigation, while developing and maintaining viable landscapes

MODIFICATIONS TO THE NEXT NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. During the first permit cycle, the City evaluated operations and maintenance in public rights-of–way (OM2). This BMP has been revised to focus on improvement and effectiveness testing of public facility maintenance practices. In addition, two new BMPs have been established: one to address operations and maintenance practices at City-owned facilities that conduct industrial/commercial-type activities (OM3), and one for other City operations and maintenance practices that can contribute non-stormwater discharges to the MS4 (OM4).

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Technical Advisory Committee composition will be reviewed.

- Pollution Prevention and Administrative Management teams will continue to monitor the runoff management program and pilot projects, and continue to provide a bridge between field operations and management.

- The P2 team will continue to be involved in pilot testing of materials and processes; ongoing monitoring, evaluation, and revision of activities; and presenting results to work groups for implementation.

- The P2 team will assist in guiding application of runoff management techniques to field activities.

- The latest draft of the OM2 evaluation and work plan will be reviewed and updated as more data is collected.

- Testing and implementation of runoff management kits will include leak containment, erosion control and runoff management in field operations.

- Work will continue to coordinate elements of the implementation plan to meet ESA, NPDES MS4, and other environmental mandates, and to work with PDOT on ways of integrating these environmental needs and program elements into their work plans.

- Rock crushing, sand and vehicle washing activities will be reviewed.

- Port-a-potty waste disposal will be reviewed.

- The Water Bureau will evaluate creating a modified version of the water quality awareness training that was presented by BOM to address NPDES MS4 and Endangered Species Act (ESA) issues.

IND1 Control discharges from industries and solid waste facilities

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

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Develop a comprehensive program to control the discharge of pollutants to the stormwater system from existing and developing industries and municipal solid waste facilities, including procedures to develop and enforce requirements, conduct inspections, and implement a monitoring program.

DESIRED OUTCOME(S)

Implement consistent approaches and enforcement to control industrial and commercial discharges.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Inspected, sampled, and administered the permits for 125 industries with discharge of stormwater to the MS4. Continued to perform annual compliance inspections and additional inspections, if warranted, to provide technical assistance or assess BMP implementation

- Continued to perform inspections and evaluate the need for stormwater permits for non-permitted industries in the MS4. Performed 92 inspections during permit year 5. Identified BMPs at these industries to minimize or remove exposure of industrial activities to stormwater.

- Began development of a stormwater enforcement response plan to implement provision in Code for industrial stormwater inspections and pollution complaints.

- The Industrial Stormwater program has reviewed 310 industrial files and evaluated impacts on the storm sewer system. Based on the file review, 169 had no identified impact on the storm sewer system. Information in the database was updated and inspections performed if needed. Twelve new industries were required to obtain stormwater permits. Forty-nine facilities remain under review.

- Performed 41 inspections and evaluated the need for stormwater permits for non-permitted industries outside the MS4. Identified BMPs at these industries to minimize or remove exposure of industrial activities to stormwater. Identified 12 industries required to obtain stormwater permits outside the MS4.

- City administered 75 additional permits for facilities that are not located in the MS4. Most of these new permits are for direct dischargers, although some of the new permits were issued for discharge to the Port's system.

- Entered into a memorandum of agreement with DEQ that provides for revenue sharing of permit fees to fund and staff city permit and inspection responsibility for direct dischargers.

- Collected and analyzed 129 samples from 77 permitted industries. In addition, conducted a monitoring and sampling program at select outfall basins to evaluate the long-term impact of the Industrial Stormwater Program. Three storm events were monitored during permit year 5. (See the Monitoring Compliance Report at the end of this Annual Compliance Report for more information)

- Updated all industrial files on a continual basis as information is received. The Aquarius database continues to receive improvements to track inspections, permits, stormwater drainage issues, monitoring results, and industrial information. Modifications to the database will enhance inclusion of pertinent information and improve reporting capabilities. Reporting capabilities have been developed for each industry that will accurately display up-to-date monitoring results for all samples taken by both the industry and the City.

- Developed capability to use GPS and began mapping outfalls to receiving streams from permitted industries.

- Reviewed 1,285 industrial information surveys done as part of the City's pretreatment program. From the responses to various stormwater-related questions, determined 1,117 facilities posed no risk to the MS4. The remaining 168 facilities are under further review.

- The City's BEST Program assisted industries with "green practices," saving water and energy and dealing with stormwater and solid waste. In FY99-00, six businesses were recognized for their efforts in these areas. Since the program started in 1992, 55 area businesses have won awards for projects/

practices that are saving them over $11.5 million per year. In all, these businesses made the following reductions:

- 38.3 million kWh of electricity saved
- 6.6 million therms of natural gas saved
- 687,000 gallons of gasoline saved
- 857 million gallons of water saved
- 63,900 tons of solid waste reduced
- 9.4 million miles (VMT) avoided
- 98,000 tons of CO_2 emissions eliminated

- Certified 22 automotive shops for the Ecological Business Program, a multi-media, multi-jurisdiction recognition program for the automotive services agency. During permit year 5, developed movie slides, radio ads, information posters, and a website for the program. Another 12-15 shops are in the process of certification.

- Developed a webpage within BES's website that describes the Industrial Stormwater Program, with links to best management practices, stormwater pollution control plan guidance documents, permit applications and other pertinent forms, appropriate EPA and DEQ websites, and other pertinent information and documents for use by industry, other jurisdictions, and the general public.

- Updated and added two additional BMP handouts (Employee Education and Identifying Non Stormwater Discharges) on preventing stormwater pollution, which are used during industrial stormwater inspections. Have pollution prevention videos available for loan to industries conducting staff training.

- Developed a brochure that addresses appropriate management of sawcut slurry. This is available to hand out when complaints are received.

- The Industrial Stormwater Program met with Multnomah County sanitarians and revised the flyer and poster addressing best management practices for reducing stormwater pollution from restaurants. These materials are handed out by the sanitarians during their restaurant inspections.

- Revised and enhanced all the source control BMPs used for Chapter 9.0 of the revised Stormwater Management Manual (see ND5).

- Actively promoted the use of storm drain stencils at various industrial locations. A non-profit organization is on contract with the City to run that program.

- The City is evaluating the development of an education and outreach program to address washwater and the mobile washer industry as part of Industrial Stormwater Program technical assistance. During permit year 5, developed interim enforcement in conjunction with DEQ to cite mobile washers and washing activities. During the next permit year, the City will identify other classes of industry that may be impacting the storm sewer system and will develop materials, if needed, to limit the discharge of pollutants to the storm sewer system.

Significant Changes/Improvements from Year 4

- During permit year 5, the City assumed authority for all facilities with industrial stormwater permits within the City of Portland. The City met with the Port of Portland and DEQ to determine the relationship of the parties with regard to facilities on Port property and the Port's industrial permits (airport and terminal 6). It was decided that the City would not administer the Port's permits for the airport and terminal 6; this will remain DEQ's responsibility. The City will administer the permits for individual facilities that have an NPDES industrial stormwater permit and discharge to a Port storm sewer. Of note is that the airport encourages all facilities at this site to be co-applicants on their permit. Thus, the City will not oversee these facilities, and will refer complaints to Port officials. The Port will provide the City with an updated list of co-applicants on a regular basis.

- Initiated a program to reinspect industries that were previously identified as having no exposure and were not required to apply for a permit. The inspections are being conducted on a five-year cycle. Industries are now being issued a "No Exposure Certification" in lieu of a permit; this certification was previously not available. The program will allow the City to effectively track these facilities. It also requires facilities to notify the City and/or DEQ if site conditions change, resulting in exposure of industrial activities to rainfall and stormwater runoff. The facilities would then be required to apply for a permit.

Comparison with Projected Accomplishments

Projected activities were generally completed as projected. All activities will continue to be enhanced and refined.

Compliance Status

In compliance with all permit dates, except for final completion of all signed intergovernmental agreement with the various co-permittees.

RELATED EMP STATUS

EMP (B)

"A description of a program, including a schedule, to detect and remove (or require the discharger to the municipal separate storm sewer system to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm system."

The following categories of industrial controls activities addressed the above EMP elements: wastewater discharge permits, accidental spill prevention plans, Pollution Complaint Program, Buildings Plan Review Section, and Fire Bureau's SARA Title III facility review. The noteworthy accomplishments and/or changes within those EMPs are as follows:

- Continued to review SARA Title III facility plans.

- Continuing remediation in the East Multnomah County Project area, including hydraulic controls in TGA, TSA, and SGA. Plume movement controls are in place for the east wellfield. Characterization and remedial efforts in the west wellfield continue.

CHALLENGES AND SOLUTIONS

For years, the City has struggled with providing consistent treatment for industries with stormwater dischargers. The City first expanded stormwater considerations into pretreatment program permits and inspections, then addressed businesses below CSO outfall diversions for stormwater permit coverage. The Industrial Stormwater Program has taken on a significantly larger portion of stormwater work from DEQ for industries throughout the City. This increased responsibility has proven to be very effective at providing citywide consistency among similar industrial properties.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. During the first permit cycle, the City implemented all elements to establish the City's Industrial Stormwater Management Program. The City also added significant pollution control

requirements for industrial and commercial facilities. In the second permit cycle, the City will continue to identify new sites with commercial/industrial type discharges for permits, coordinate with other jurisdictions and agencies, provide educational information for these dischargers, and continue to develop and implement permitting or policies for identified non-stormwater discharges that are negatively impacting the MS4.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Continue to inspect all permitted industries discharging to the MS4 once per year, and conduct sampling as needed. (There are currently approximately 125 permitted industries.)

- Continue to inspect non-permitted industries discharging to the MS4 to evaluate the need for permits (approximately 200-300 per year).

- Continue certifications in the Eco-Logical Business Program Pilot with the P2O Team and the Automotive Advisory Group. The goal is to have 40 shops certified per year for the next 2-3 years.

- Continue to identify and evaluate landfills for the requirement to obtain a stormwater permit.

- Complete the stormwater enforcement response plan and change code provisions for industrial stormwater inspections and pollution complaints.

ILL1	Improve the spill prevention and response program

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Improve the Spill Prevention and Response program to reduce the frequency and impact of spills to the stormwater system.

DESIRED OUTCOME(S)

Reduce the impact of spills on surface and groundwater.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Continued to meet quarterly with the Regional Spill Committee.

- Began discussions and presentation about spill training exercises. The regional Spill Committee is considering a fall exercise potentially timed with the Hazardous Materials Managers/Coast Guard exercise in fall 2000.

- Received initial approvals to install a simple spill training area adjacent to the Fire Bureau Training Center on NE 122nd. Final approval should occur in the first quarter of the new permit cycle.

- Began compilation of material for the background section of the Sump Management Plan. Began to eliminate discrepancies in the mapping data that identify sump locations.

- As an aid to spill response capacity, completed the first version of a "Spill Pond Book," documenting all known City of Portland-owned open stormwater facilities (other than roadside ditches) that could be subject to spills from the right-of-way. Also revised and expanded the "Outfall Book," which provides documentation on all City of Portland-owned storm and combined outfalls to the Willamette River and Columbia Slough.

- Continued to enhance the duty officer training program.

- Revised and simplified industrial and spill control BMPs in the Stormwater Management Manual, which provides stormwater quality and quantity management requirements for new and redevelopment. These BMPs incorporate aspects of the Groundwater Issues white paper to protect both

surface water and groundwater resources. The hazardous material BMP in the Stormwater Management Manual (Section 9.5) replaces the Columbia South Shore Hazardous Containment Handbook.

- Continued oversight of remediation at contaminated industrial sites within the Columbia South Shore area.

Significant Changes/Improvements from Year 4

The Cities of Fairview, Gresham, and Portland, the community of Interlachen, and representatives from other interested parties have formed the Columbia South Shore Wellfield Wellhead Protection Committee to establish complementary wellhead protections areas and regulations.

Comparison with Projected Accomplishments

- Received a contact name and invited the state police representative to participate in the Regional Spill Committee.

- Continued work with various agencies to form the workplan for a Sump Management Plan. This plan will address some of the remaining issues and concerns relating to spill impacts on groundwater resources. It will incorporate or address the significant portions of the Groundwater Protection from Spills workplan developed as part of this BMP.

Compliance Status

In compliance.

RELATED EMP STATUS

<u>EMP (B)(4)</u>

"*A description of procedures to prevent, contain and respond to spills that may discharge into the municipal separate storm sewer system.*"

The following categories of activities addressed the above EMP elements: Spill Response Program, Accidental Spill Prevention Program, tank farm policy, Hazardous Materials Response Team, Columbia South Shore, hazardous substances, and Buildings Plan Review Section. The noteworthy accomplishments and/or changes within those EMPs are as follows:

-

- New structures proposed in the Columbia South Shore Plan District (COSS) that require building permits must receive Water Bureau approval prior to permit issuance if chemicals will be used on the site. Approximately 50 permit applications were reviewed. All new buildings in the COSS have sealed floors and secondary containment, where necessary. Storm drains and discharge lines in loading and storage areas have valves to contain spills onsite.

- The Fire Bureau Hazardous Materials response team responded to approximately 125 hazardous materials calls, and the Fire Bureau Marine Division Fire Boats responded to approximately 30 marine hazardous materials/oil incidents in FY 1999-00.

CHALLENGES AND SOLUTIONS

The balance of priorities between groundwater, stormwater, and drainage continues to be a significant citywide concern. Protection of groundwater is universally supported, however. The strategies to implement that protection are in discussion.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. In the second permit cycle, this BMP will continue activities established to address NPDES stormwater permit requirements related to spill prevention, containment, and response. These include implementation of all elements of the Illicit Discharge Elimination Program (ILL1) and spill prevention and response programs (ILL2).

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Establish the spill training facility at the Fire Bureau Training Center on NE 122nd Avenue.

- Complete the spill training curriculum.

- Evaluate an existing and/or host a new regional spill training exercise.

- Complete draft of the Sump Management Plan, which will include measures highlighted in the Groundwater Issue Paper.

ILL2	Prevent, search for, detect, and control illicit (non-stormwater) discharges

The Illicit Discharges Elimination Program (IDEP) is being conducted by the Spill Protection and Citizen Response Section within BES's Environmental Compliance Division (ECD) and the Industrial Source Control Division (ISCD).

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Develop and implement a program to prevent, search for, detect, and control illicit discharges to the stormwater system.

DESIRED OUTCOME(S)

Reduce/eliminate unauthorized discharges to the stormwater system and surface waters.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99 - 00)

Accomplishments

- Continued revising priority outfall list; currently tracking 108 outfalls.

- Verified connections at 470 outfalls, including onsite inspections of commercial and industrial facilities. One illicit connection and three illicit discharges identified and corrected.

- Continued dry-weather monitoring at all major outfalls and five CSO (below the diversion structure) outfalls during the summer sampling period of 1999, and sampled all priority outfalls at least twice.

- Identified six new public outfalls along NE Airport Way.

- Continued sampling on 19 non-stormwater discharges identified in the NPDES permit to determine their impact on the MS4. Have now completed monitoring work on 5 of the 19 activities, including air conditioning condensate, water line, and tank flushing, fire fighting activities and lawn watering. Sampling in fall 1999 and winter/spring 2000 included:

- Flows from riparian habitats and wetlands – monitoring to be completed over next year.
- Springs
- Ground water infiltration
- Individual residential car washing

- Continued to work with a variety of bureaus on prohibiting non-stormwater discharges to the MS4:

  - Fire Bureau: BES and Fire made source control and vehicle washing operation changes to five fire station remodels in for plan review this permit year.

  - Water Bureau: The City has hired a new Zonal Flushing Program manager. She has budgeted for pilot testing events during the next permit year. In addition, the Water Bureau has made significant source control changes to its cement batch plant located near the Columbia Slough. That site now has stricter controls on TSS, pH, and bulk storage of erodible materials.

- Developed policy and a decision matrix for the allowance of pumped groundwater discharges to the MS4.

- Continued to implement measures to limit impacts from non-stormwater discharges related to City operations.

- Reviewed approximately 350 commercial and industrial building plans and implemented a new permit tracking database system. This system is still undergoing improvements that will allow more accurate tracking in the future.

- Revised the 11 BMPs in the Stormwater Management Manual to Stormwater Pollution Controls (SPCs), and moved them from Chapter 7 to Chapter 9:

  1. Fuel Dispensing Facilities
  2. Above-Ground Storage of Liquid Materials
  3. Solid Waste Storage Areas, Containers, and Trash Compactors
  4. Storage, Use, and Transportation of Hazardous/Toxic Materials in Designated Groundwater Resource Protection Areas.
  5. Exterior Storage of Bulk Materials
  6. Material Transfer Areas/Loading Docks
  7. Vehicle and Equipment Traffic Areas, Parking, and Storage

8. Covered Vehicle Parking Areas
9. Equipment and/or Vehicle Washing Facilities
10. Interior Floor Drains
11. Stormwater Disposal from Development on Recycled Land

Significant Changes/Improvements from Year 4

Worked with Portland International Raceway and the Expo Center to prohibit washing by race teams and exhibitors at these sites. The Expo Center includes a washing prohibition in all contracts.

As a result of developing non-stormwater monitoring policy for air-conditioning condensate, commercial installations for new development are now required to discharge to the sanitary sewer, and existing development is required to reconnect to the sanitary sewer if it is impacting water quality. This policy is incorporated into industrial stormwater inspections and is used for new developments and complaints.

Comparison with Projected Accomplishments

Continuing with all BMP and EMP programs.

Compliance Status

In compliance with all permit dates, except for final completion of a signed IGA with the co-permittees; the need for the IGA is currently being evaluated..

RELATED EMP STATUS

<u>EMP (B)</u>

"*A description of a program, including a schedule, to detect and remove (or require the discharge to the municipal separate storm sewer system to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm system.*"

<u>EMP (B)(1)</u>

"*A description of a program, including inspections, to implement and enforce an ordinance, order or similar means to prevent illicit discharges to municipal separate storm sewer systems.*"

EMP (B)(5)

"... a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or water quality impacts..."

EMP (B)(6)

"... educational activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials."

The following categories of industrial controls activities addressed the above EMP elements: wastewater discharge permits; accidental spill prevention plans; Pollution Complaint Program; Buildings Plan Review Section; Fire Bureau's SARA Title III facility review; Spill Response Program; Tank Farm Policy and Hazardous Materials Response Team; SOLV events; Metro's Recycling Information Center line; BES Solid Waste and Recycling Programs; and development controls, including plans review. The noteworthy accomplishments and/or changes within those EMPs are as follows:

- The BES hotline number (823-7180) receives about 1,500 calls per year regarding pollution complaints, industry information, spills, seepage discharges, and agency referrals. This hotline is staffed 24 hours a day.

- The City continues to comply with the intent of the State Toxic Materials Reduction Act through evaluation of all new chemicals used in various City facilities.

- The City's solid waste/recycling programs achieved waste reduction measures that limit debris and floatable materials from entering the storm drainage and local waterway systems.

- The City's Green Team of concerned employees instigated a number of new activities this year. The Green Team created a website for City employees to exchange surplus office supplies rather than buy new supplies. The Green Team also sponsored its third Green Fair, with over 60 vendors exhibiting environmentally friendly products. The Green Team has been reinvigorated and has rededicated itself to making internal environmentally friendly changes at the City of Portland.

- Stop Oregon Litter and Vandalism (SOLV), a statewide non-profit group, retrieved approximately 63.5 tons of litter and plant debris during its Down by the Riverside event on May 22, 1999.

CHALLENGES AND SOLUTIONS

Consistent citywide program coverage to control illicit discharges continues to be a challenge, but the effort will be moving forward with the Integrated Watershed Approach planning effort.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. In the second permit cycle, this BMP will continue activities established to address NPDES stormwater permit requirements related to spill prevention, containment, and response. These include implementation of all elements of the Illicit Discharge Elimination Program (ILL1) and spill prevention and response programs (ILL2).

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Continue to implement the IDEP and develop a workplan and schedule; integrate results into the BES mapping system.

- Continue to work with the Fire Bureau to implement source control for vehicle washing at all new and remodeled fire stations.

- Conduct pilot tests to study effective flushing velocities for cleaning and to test operations/procedures to limit impacts to the MS4.

- Continue to evaluate natural area and groundwater-related non-stormwater discharges. Continue to identify sampling locations and methodologies.

- Continue to remove illicit discharges to the storm sewer system as they are identified during spill response, pretreatment, or stormwater permit inspections.

ND2	Work with landowners and public agency staff to control pollutants from unregulated sites

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Work with landowners, tenants, and public agencies to apply practical erosion/sediment control and other practices to reduce pollutant discharges associated with undeveloped and developed properties and park lands.

Note: This BMP requires the City to develop and implement a program to train and educate City staff about stormwater pollution problems and how to report problems, and to then use City staff "trainers" to provide this education/training to the public.

DESIRED OUTCOME(S)

Implement coordinated citywide training to reduce stormwater pollution on developed/undeveloped property and park lands.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- In April 2000, conducted a Green Building Workshop. Seventy people attended the one-day event to learn about a systems approach to green buildings. The workshop attracted architects, construction firms, utilities, engineering firms, consultants, government and elected officials to learn about how to communicate needs to diverse audiences involved in the green buildings process.

- Many of the education-related elements of this BMP were implemented through specific BMPs by each bureau. For example, training on the new Erosion Control Handbook was provided under BMP ND4.

- Other training is occurring on an intrabureau basis. The Maintenance Bureau continues to work on changing the culture of the organization. Similar to incorporating traffic control and safety into daily activities, the Bureau is moving towards incorporating water quality and other environmental stewardship into daily activities. One of the methods being use to accomplish this is drawing developing leaders into the Pollution Prevention Team. By promoting future leaders into the team, environmental stewardship values and awareness are moving deeper into the organization. These actions set up

a stable/sustainable environmental and water quality focus in managing the Bureau's operations.

Significant Changes/Improvements from Year 4

Work on this BMP was focused within each City bureau.

Comparison with Projected Accomplishments

Outreach activities from BES to other bureaus have been greatly reduced because of limited staff resources. However, intrabureau training and training related to specific BMPs is ongoing.

Compliance Status

In compliance.

RELATED EMP STATUS

EMP (iv)

CHALLENGES AND SOLUTIONS

Limited staff resources to implement this BMP continue to be a challenge. Combining this BMP with the PI and ED BMP under the second permit cycle will help address this problem.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. In the course of implementing the new development BMPs during the first permit term, it became evident that many of the activities in these BMPs related closely to, or were partially covered by, other BMPs. For the second permit term, the City has combined the duplicative BMPs. For example, because the ND2 activities are related to public involvement (working with landowners, tenants, and public agencies to reduce erosion and control sediment), they have been incorporated into BMP PI1.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Include City staff in Stormwater Management Manual training courses (ND5) and other specific BMP training opportunities.

ND3 Improve the NEPA project review process to address water quality

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Improve involvement in the National Environmental Policy Act (NEPA) project review process to better address water quality issues.

DESIRED OUTCOME(S)

Promote and facilitate, through a combination of administrative, regulatory, technical, and incentive approaches, sustainable urban development that improves and maintains water quality and is consistent with "Sustainable City Principles."

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY99-00)

Significant attention has and continues to be given to BMP ND5, which will cover all potential NEPA projects. The Third Annual Compliance Report (FY 1997-98) requested that ND3 be incorporated into BMP ND5. It is assumed this is acceptable, and ND3 is incorporated into ND5 for this year's Annual Report. See ND5 for all related issues.

POTENTIAL MODIFICATIONS TO THE PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. In the course of implementing the new development BMPs during the first permit term, it became evident that many of the activities in these BMPs related closely to, or were partially covered by, other BMPs. In the second permit term, the City has combined the duplicative BMPs. The activities in ND3 (requiring NEPA projects to address water quality) have been incorporated into ND2 (stormwater standards for new and redevelopment).

ND4	Develop and implement a comprehensive pollution control program for construction sites

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Develop a comprehensive pollutant discharge control program for all construction sites.

DESIRED OUTCOME(S)

Create and implement a comprehensive program to minimize/eliminate pollutant loads (erosion and other pollutants) from construction sites citywide.

Conduct activities in three areas: 1) code authority, 2) program administration, and 3) education/training.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Revised the Erosion Prevention and Sediment Control Plans Technical Guidance Handbook, effective March 1, 2000. This document is now called the Erosion Control Manual. It includes nine new BMPs, including seven BMPs created to help control pollutants from construction sites, and enforceable BMP performance standards for all BMPs. It is intended to comply with the requirements of the NPDES permit and Metro's Title 3 Functional Plan, and assist the City's response to the Endangered Species Act listing of steelhead and salmon.

- Developed and offered erosion control training with the Urban Watershed Institute. Over 300 City designers, inspectors, and plan reviewers completed a 1-day session, which included classroom instruction, field demonstration, and a walking tour of a subdivision site being developed. An additional 200 field maintenance staff in the Bureaus of Maintenance and Water completed a 4-hour training session on providing erosion control for maintenance and small repair and construction activities.

- Modified and clarified the administrative structure for erosion control review, inspection, and enforcement. The Office of Planning and Development Review (OPDR) reviews, inspects, and enforces erosion control permits on private property. Public works bureaus review, inspect, and enforce erosion control on their contract and permit projects. OPDR takes the lead for

responding to complaints through a recently established complaint hotline phone number, with the assistance of BES for non-permit activity complaints and spill pollution incidents.

- Continued the inspection supervisor's team to address outstanding issues generated by City Code Title 10 (Erosion and Sediment Control). Issues include continued training of staff and customers, enforcement, complaint resolution, and coordination of work in progress.

- Continued coordination meetings with City inspectors for public works projects and building permits. These meetings coordinate grading, utility, and street construction inspection activities on subdivision sites for the various public works permits and private property permits.

- OPDR is beginning to put together an advisory committee for the long-term maintenance and revision to the Erosion Control Manual.

- Implemented an erosion control hotline number (823-0900). This centralized voicemail system logs complaints and distributes them to the correct bureau for enforcement. This number is advertised on signage at all permitted sites of ground disturbance.

- Continued operation of the Soil Trader, which aided the beneficial reuse of over 250,000 cubic yards of material. Substantially modified and upgraded the Soil Trader website to make it more user friendly. Other construction commodities, such as asphalt (crushed and rubble), concrete (crushed and rubble), woody debris, and fencing (up to 6 feet high and over 6 feet high) were added for reuse on the site.

- Revised floodplain regulations in City Code Title 24.50 to require balancing fill with excavated material. This change complies with Metro's Title 3. It requires balancing cuts and fills in all floodplains within the City. Prior regulation had this requirement only for the Johnson Creek floodplain. The change also introduces the Metro Flood Management Area maps for use, along with the FEMA floodplain maps. This change was effective March 1, 2000. The effect will be to maintain the flood storage capacity of the floodplains.

Significant Changes/Improvements from Year 4

Implemented new erosion control code (Title 10: Erosion and Sediment Control), effective March 1, 2000. It requires erosion and sediment control measures for all ground-disturbing construction and development activities throughout the City.

This code is enforceable by all City bureaus that issue permits for ground disturbance. Existing codes in the City that deal with erosion and sediment control have been revised to accommodate implementation of Title 10. Title 10 is intended to comply with the requirements of the NPDES permit, Metro's Title 3 Functional Plan, and the upcoming requirements of the Endangered Species Act listing of steelhead and salmon.

Comparison with Projected Accomplishments

- Completed the final revisions to the Erosion Control Manual as predicted.
- Passed the Title 10 erosion control regulations in December 1999, with a March 1, 2000 effective date.
- Developed and implemented two separate training curriculums that have been used to enhance the education of over 500 City staff.
- Have not formally developed a program for trench dewatering discharges to the MS4.

Compliance Status

All four task elements of this BMP are well underway, but still beyond the permit schedule for implementation.

RELATED EMP STATUS

<u>EMP (D)</u>

"*... a program to implement and maintain structural and non-structural best management practices to reduce pollutants... from construction sites....*"

<u>EMP (D)(1)</u>

"*...description of procedures for site planning which incorporate consideration of potential water quality impacts...*"

<u>EMP(D)(2)</u>

"*...description of requirements for nonstructural and structural best management practices...*"

EMP (D)(3)

"...description of procedures for identifying priorities for inspecting sites and enforcing control measures which consider the nature of the construction activity, topography, and characteristics of soils and receiving water quality...."

The following categories of activities to reduce construction site pollutants addressed the above EMP elements: Development controls and construction inspection activities in City Code Title 14 (Vehicle Leaks and Waste Controls), Title 17.38 (Drainage and Water Quality), Title 17.40 (Pavement), Title 18 (City Engineer Control of Wastes and Dumping), Title 24 (Clearing, Grading and Erosion Control), and Title 33 (Planning and Zoning). The noteworthy accomplishments and/or changes within these EMPs are as follows:

- The City's construction site recycling program continues to operate, with over 750 out of 1,500 eligible sites reporting participation. This level of 50 percent reporting is a slight decrease over permit year 4, which had a 67 percent reporting rate. Staff estimates additional sites are participating, but do not send in all their reporting forms.

CHALLENGES AND SOLUTIONS

With a comprehensive program instituted, the biggest challenge is integrating enhanced erosion control efforts into the existing City design, review, and inspection systems. New computer tracking programs and complaint response systems have been instituted. New internal procedures and protocols have been implemented. Throughout the last quarter of permit year 5 and into the next permit cycle, adjustments in interbureau coordination and design, permitting, and inspection practices will continue to be made.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. In the course of implementing the new development BMPs during the first permit term, it became evident that many of the activities in these BMPs related closely to, or were partially covered by, other BMPs. In the second permit term, the City has combined the duplicative BMPs. BMPs ND4 and ND5 have been updated to focus on implementation and refinement of erosion control and stormwater management standards, respectively, and are included in ND1 and ND2.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Continue to work on contract language and permit requirements for the appropriate control of construction site dewatering activities.

- Determine the methods to be used for revision of Title 10 and the Erosion Control Manual. Determine the role of interested stakeholders in the process.

- Create methodologies to evaluate the effectiveness of the new Title 10 regulations, the Erosion Control Manual, and their implementation. Methodologies may include site checks, customer surveys, or visual and other types of monitoring.

- Continue to evaluate the need for continuing education, and modify or develop curriculums as needed.

ND5	Develop stormwater quality treatment facility requirements for all new and redevelopment projects.

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Develop stormwater quality treatment facility requirements for all new and redevelopment projects.

DESIRED OUTCOME(S)

Promote and facilitate, through a combination of administrative, regulatory, technical and incentive approaches, sustainable urban development that improves and maintains water quality and is consistent with "Sustainable City Principles."

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Convened the Stormwater Advisory Committee at the direction of City Council to continue the policy development work previously begun by the Stormwater Policy Advisory Committee and recommend modifications to the Stormwater Management Manual. The SAC membership includes developers/builders, designers, environmental groups, and citizen activists., The SAC presented recommendations for changes to stormwater management policies to City Council in spring 2000.

- Began revising the Stormwater Management Manual in response to the SAC recommendations and comments from technical users.

- Modified City Code chapter 17.38 and related Building Bureau codes.

- Conducted numerous public workshops to explain the new Stormwater Management Manual.

See BMP STR4 regarding eco-roof and other stormwater management techniques for new development-related research.

Significant Changes/Improvements from Year 4

None

Comparison with Projected Accomplishments

Continuing to modify City Code to coordinate with new Stormwater Management Manual policies. Due to the controversial nature of some proposed revisions and the time needed to involve affected bureaus and stakeholders, modification of City code has taken longer than projected

Compliance Status
In compliance.

RELATED EMP STATUS

EMP (iv)

"Program shall include a comprehensive planning process..., control techniques and systems,...and such other provisions which are appropriate."

Land Use Plan Districts

The City continues to update its Comprehensive Plan to achieve compliance with the Metro 2040 Growth Plan. The City is focusing efforts on the 2040 Town Centers and Title 3 requirements to develop solutions that integrate stormwater, stream quality, and livability issues in areas targeted for increased density. However, these efforts are difficult, since many view stormwater quality and pollution reduction as less important than the land use objectives.

Southwest Community Plan

Work restarted on the Southwest Community Plan late in permit year 4 after being postponed in permit year 3. Work continued through permit year 5 and will be ongoing in permit year 6.

Portland International Center/Cascade Station

Revisions to the existing plan district were completed in permit year 4 and are currently being implemented. The revisions include a new approach to land use and stormwater quality management. The area is approximately 500 acres of airport property (Port of Portland). All parking lots must be designed to incorporate stormwater management in landscaping facilities.
Smith and Bybee Lakes Natural Resources Management Plan (NRMP)

All development plans within the management area were in conformance with the NRMP requirements, including stormwater quality controls.

Natural Resources Management Plan for Peninsula Drainage District No. 1

This plan was completed in June 1997 and went into effect July 12, 1997.

State Transportation Planning

The City adopted a zoning code in October 1996 that contributes to reductions in vehicle miles traveled and includes pedestrian and transit-friendly development.

Public Facilities Management

BES and the Parks Bureau have collaborated on numerous projects to help develop park improvements site plans that reduce pollutants in stormwater discharges.

<u>EMP A(2)</u>

"*A description of planning procedures to develop, implement and enforce controls to reduce the discharge of pollutants from municipal separated storm sewer systems discharges from areas of new development and significant redevelopment. Such plans shall address controls to reduce pollutant discharges after construction is complete.*"

City Code Title 34, Subdivisions

The City continues the process of rewriting Title 34 Subdivision Regulations. Due to the controversial content of the code, the revisions will be revisited by the Planning Commission in permit year 6.

City Code Chapter 33.266 Parking and Loading

Amendments to Title 33 (Planning and Zoning for Parking Lots) were drafted to allow stormwater runoff to be managed in parking lot landscaped areas. The proposed amendments provide consistency between the stormwater management requirements for parking lots and parking lot landscaping requirements.

City Code Chapter 33.430, Environmental Zones

A review of the environmental zone code was begun in permit year 5. The review encompasses water quality, resource, and Endangered Species Act issues. Draft revisions will be prepared in permit year 6.

City Code Chapter 33.535, Johnson Creek

Johnson Creek Plan District code changes adopted in April 1998 are still in place. The requirements include balanced cut and fill within the 100-year floodplain, a 50 percent impervious surface limitation in all zones of the Johnson Creek Floodplain Subdistrict, and stormwater flow and quality requirements.

City Code Chapter 33.515, Columbia South Shore Plan District

Plan district requirements for land use are still in place. Hazardous materials storage and use review is now covered by requirements of the Stormwater Management Manual.

Stormwater Discount Program

BES is currently developing an off-site stormwater management fee for projects that cannot provide onsite stormwater management in conformance with the Stormwater Management Manual. In FY 98-99, BES implemented a new SDC discount for the onsite portion of the SDC charge. Discussion continues regarding a means of changing stormwater user fees to encourage properties to implement onsite management and retrofits.

CHALLENGES AND SOLUTIONS

New and redevelopment issues continue to be the most controversial and difficult to implement of all the NPDES tasks.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. In the course of implementing the new development BMPs during the first permit term, it became evident that many of the activities in these BMPs related closely to, or were partially covered by, other BMPs. In the second permit term, the City has combined the duplicative BMPs. BMPs ND4 and ND5 have been updated to focus on implementation and refinement of erosion control and stormwater management standards, respectively, and included in ND1 and ND2.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Continue work with the SAC to develop and refine stormwater management policies.

- Continue to modify City codes as needed to implement Stormwater Management Manual requirements and support/facilitate innovation and resource protection in stormwater planning, design, and management.

- Implement revisions to the Stormwater Management Manual and modify every two years..

- Adopt modifications to Title 33 parking and landscaping requirements that will support integration of stormwater management with parking area design to reduce impervious surfaces in parking lots. (See BMP PS1 for more detail.

- Complete code changes and guidance specifications for building-related systems (i.e. gutterless, downspout disconnect, chain drip).

STR1	Evaluate the need for new stormwater treatment facilities. Design and construct if appropriate.

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Evaluate the need for construction of stormwater quality treatment facilities. If appropriate, develop plans for construction, maintenance and monitoring of the facilities. Construct and monitor appropriate facilities.

DESIRED OUTCOME(S)

Evaluate, and if appropriate, design and construct stormwater treatment facilities within selected areas.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Completed design and construction of the sites A&B sand filter project. Completed in June 2000, the project will receive runoff at the beginning of this year's (2000) rainy season.

- Completed design and construction of phase 1 of the 158th/162nd outfall project. The project includes the sediment forebay and hazardous spill containment facility near the intersection of NE 158th Avenue and Sandy Boulevard.

- Completed design for phase 2 of the Whitaker Pond stormwater outfall treatment facility. This phase of work involves an oil water separation vault upstream of the stream forebay. The vault will capture oils and grease before discharge into Whitaker Pond. Phase 1, which included pond excavation and grading, was completed in permit year 4.

- Completed design of the Buffalo Slough water quality facility. This facility will treat storm runoff that drains to the Buffalo Slough through outfall #72, near the intersection of N.E. 33rd Drive and N.E. Argyle Street.

- Constructed phase 1 (sediment and hazardous waste containment bay) of the NE 158th/162nd Avenue facility. Began design of phase 2 (wetland restoration).

- BES and the Bureau of Parks and Recreation began design of the Willamette Park riparian restoration and stormwater management project. The project involves establishing a 0.5-acre functioning riparian area (with controlled river access, picnic area, and viewpoints) and revegetating/stabilizing a portion of the Willamette riverbank. The project will also involve capturing stormwater (water quality design storm) from the 2-acre parking lot and diverting it to bioswales for treatment before discharging to the river.

- Began implementation of the Public Facilities Plan (PFP), which provides the framework for completing this BMP to reduce pollutants in MS4 discharges. The PFP lists deficiencies in the stormwater system and recommends that all predesign include implementation or retrofitting for water quality improvements.

- Continued work on Johnson Creek predesign, which will address major Johnson Creek outfalls.

- Continued discussions with the Bureau of Planning to update the Willamette River Greenway code. BES is participating to ensure that stormwater outfalls are addressed.

Significant Changes/Improvements from Year 4

None

Comparison with Projected Accomplishments

Protracted property negotiations and permitting issues have altered the scope of work or delayed construction of some facilities (e.g., the NE 148th site and phase 2 pipe and diversion work for Whitaker Ponds).

Compliance Status

In compliance

RELATED EMP STATUS

<u>EMP (A)</u>

"...A description of structural and source control measures to reduce pollutants from runoff from commercial and residential areas...to be implemented during the life of the permit."

Structural and Source Controls

The City continues to implement structural water quality facilities as it separates segments of the Combined Sewer Overflow (CSO) area and incorporates facilities into new public building sites to manage stormwater discharge. Implementation of green solutions as part of the Willamette River predesign effort will provide additional opportunities for stormwater management in the CSO area.

CHALLENGES AND SOLUTIONS

An ongoing challenge is coordination among the watershed, PFP, and CSO programs to ensure that structural water quality facilities are evaluated and selected in a consistent manner citywide. The integration of this BMP into the Integrated Watershed Plan (IWP) will assist in this effort. In addition to providing water quality benefits, facility design should also consider potential fish (ESA) impacts. The integration of NPDES requirements into the IWP process will help address these issues.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. NPDES regulations require consideration of integration of flood control and water quality issues when designing new facilities and improving existing facilities. During the first permit term, two BMPs were established to address new facilities (STR1) and facility retrofits (STR2). Because the activities under both BMPs focus on MS4-related water quality improvements, the City has combined these two BMPs into a new STR1.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Continue to implement watershed facilities/resource plans that address major outfalls.

- Purchase property for the NE 148th site. Planning for the basin will be revisited to ensure all localized options for onsite stormwater management that would affect the size of the 148th facility (e.g., green solutions upstream) have been identified. Once the evaluation is completed, design for the facility will be finalized.

- Construct phase 2 (pipe and diversion work) of Whitaker Ponds.

- Complete the Wapato wetland water quality facility (Columbia Slough).

- Complete design and construction of the Willamette Park riparian restoration and stormwater management project.

- Complete construction of the Buffalo Slough water quality facility (Columbia Slough).

- As part of the Johnson Creek predesign, continue to evaluate the 1994 Johnson Creek Resource Management Plan recommendations for each major outfall. In the initial phase of implementation, outfalls that complement the goals of the high-priority sites that meet the primary predesign goals will be selected for action. As subsequent phases of the predesign are implemented, additional outfalls will be targeted for improvement.

- Complete Johnson Creek predesign watershed plan.

- Continue work on CSO stream diversion predesign, which includes a separation evaluation.

STR2	Retrofit flood control facilities to address water quality

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Determine the practicability of retrofitting existing drainage and flood control facilities (e.g., retention basins, infiltration basins and drainage channels) to improve water quality. If practicable, develop plan(s) and implement.

DESIRED OUTCOME(S)

Evaluate, and, if appropriate, design and construct stormwater treatment facilities or retrofit existing facilities within selected areas.

Retrofit existing flood control infrastructure to maximize pollutant reduction without impairing flood control performance.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Completed predesign work on the Stephens Creek Willamette confluence project. This project, part of the settlement agreement between the City and Northwest Environmental Advocates (NWEA), evaluated stormwater quality management opportunities.

- Completed design of the Heron Pointe stormwater bioswale and wetland enhancement. BES and the residents of the Heron Pointe Condominium designed a project in the Willamette Greenway at Heron Pointe (SW Macadam Ave.). The project will divert stormwater from an existing outfall pipe into a bioswale/wetland for passive treatment before infiltration into the soil or inflow to the river. The project also entails removing invasive plant species and planting natural riparian species at the 1.2-acre project site.

- Installed Brookside phase 2 wetland plantings. Performed maintenance and monitoring, including monitoring of swales and Stormceptors for water quality.

- Completed design and construction of the pipe system and diversion structure for the Russell Pond retrofit project.

- Designed and constructed the sand filter portion of BES A&B, a water quality demonstration project retrofit in the Parkrose area.

- Began evaluating pollutant loading and modeling of storm systems to determine the feasibility of capturing the water quality storm event in the combined system as part of the Southwest parallel interceptor project. This approach will provide stormwater treatment for an area in which regional stormwater facilities are impractical due to steep slopes and clay soils.

Significant Changes/Improvements from Year 4

During permit year 5, the Tower site project in the Fanno Creek basin was further delayed. As reported in the year 4 Annual Compliance Report, the Tower site design included a large overbank wetland facility. However, DEQ and the Oregon Department of Fish and Wildlife (ODFW) denied permits because of concern about negative fish impacts. The project scope was modified to delete the off-channel wetland component and to focus on bank stabilization and instream restoration, in partnership with the Unified Sewerage Agency. The project has been delayed because USA has not secured funding for its portion of the project costs.

Comparison with Projected Accomplishments

Accomplishments are close to projections.

Compliance Status

In compliance.

RELATED EMP STATUS

<u>EMP (A)</u>

"... A description of structural and source control measures to reduce pollutants from runoff from commercial and residential areas... to be implemented during the life of the permit."

Structural and Source Controls

Public facilities planning is now a part of this BMP's tasks. The Public Facilities Plan (PFP) identifies and prioritizes drainage improvements citywide, including reducing pollutants in the MS4.

EMP (A)(4)

"...procedures to assure that flood management projects assess the impacts on water quality... structural flood control devices have been evaluated... provide additional pollutant removal..."

Drainage and Stormwater Quality

This EMP is being addressed through the PFP and Integrated Watershed Plan (IWP). The PFP identifies and prioritizes drainage improvements citywide, and the IWP provides coordinated project planning and implementation on a watershed basis.

CHALLENGES AND SOLUTIONS

Similar to BMP STR1, an ongoing challenge is the coordination among watershed, CSO, facilities planning, and other City programs to ensure that water quality impacts are addressed in the design/construction of new and retrofitted flood control facilities. In addition to providing water quality benefits, facility retrofits should also consider potential fish (ESA) impacts. The integration of NPDES requirements into the IWP process will help address these issues.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. NPDES regulations require consideration of integration of flood control and water quality issues when designing new facilities and improving existing facilities. During the first permit term, two BMPs were established to address new facilities (STR1) and facility retrofits (STR2). Because the activities under both BMPs focus on MS4-related water quality improvements, the City has combined these two BMPs into a new STR1.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Construct Russell Pond swale path and plantings.

- Construct the Heron Pointe Stormwater bioswale and wetland enhancement project in the Willamette Greenway.

- Continue Johnson Creek predesign activities, focusing on the evaluation of the 1994 Johnson Creek Resource Management Plan recommendations for each major outfall.

- Continue evaluating pollutant loading and modeling of storm systems to determine the feasibility of capturing the water quality storm event in the combined system as part of the Southwest parallel interceptor project. Extend the modeling effort to the west-side tunnel project area.

STR3	Support community and government tree planting programs

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Support government and community tree planting programs.

DESIRED OUTCOME(S)

Promote and facilitate more tree planting to shade impervious surfaces and stream riparian corridors and intercept more precipitation. Through a combination of administrative, regulatory, technical and incentive approaches, support sustainable urban development that improves and maintains water quality and is consistent with "Sustainable City Principles."

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Continued implementation of the Urban Forest Master Plan.

- The City's urban forestry activities have remained much the same as they were in 1993, which includes tree maintenance, preservation, and education.

- Continued implementation of a neighborhood Tree Liaison Program..

- The Urban Forestry Division continues to promote street tree plantings that provide more shade to address water quality. During permit year 5,220 trees were planted in natural areas and 364 trees were planted in City parks and as street trees.

- Friends of Trees Trees (FOT) uses City donations to fund a portion of its community tree-planting program, including natural area restoration projects and Youth Tree Corps program. During permit year 5, FOT planted 1,862 trees in neighborhoods, 13,330 tree seedlings and shrubs in natural areas, and 418 trees on Portland Public Schools properties.

- Under BES's Watershed Revegetation Program, volunteers and contract crews removed non-native vegetation in watersheds throughout Portland and planted over 258,000 native trees, 124,000 shrubs, and 75,900 cuttings on 294 acres. In addition, 109,900 wetland plants were planted on over 52 acres of emergent wetlands. The program also provided some native trees and

shrubs to other local agencies and non-profit groups for watershed revegetation work. Since its inception, the Revegetation Program has restored 40 miles of streambank and replanted 570 acres of riparian vegetation and 80 acres of wetland.

- Completed design and initiated work on numerous stream revegetation projects. See Related EMP section on ***Watershed Program Tree and Vegetation Planting*** below.

- Proposed modifications to City Code Title 33 (Planning and Zoning) for parking lots to provide increased vegetation and trees. The proposed code revision will also allow stormwater runoff to be managed in interior and perimeter landscaped areas.

- Provided $25,000 to SOLV to support its Team Up revegetation and restoration program. Six project sites were directly co-sponsored by the City.

Significant Changes/Improvements from Year 4

None

Comparison with Projected Accomplishments

- Identified the area to monitor interception characteristics of trees (see Year 5 Monitoring Report).

- Proposed modifications to City Code Chapter 33 to allow stormwater management in required landscaped area as a means to encourage additional tree planting on City projects (see PS1).

- Additional work is needed to revise the City's Approved Street Tree List to include more native trees. This work will include implementation of a demonstration project.

Compliance Status

On schedule

RELATED EMP STATUS

EMP (iv)

"Program shall include a comprehensive planning process,...control techniques and systems,...and such other provisions which are appropriate."

Watershed Program Tree and Vegetation Planting

- **Columbia Slough:** Planted 85,608 trees, 39,492 shrubs, 47,700 cuttings on 96.4 acres, and 86,300 wetland plants on 44 wetland emergent acres.

- **Johnson Creek:** Planted 8,231 trees, 3,708 shrubs, 4,600 cuttings on 7.75 acres.

- **Fanno Creek:** Planted 15,375 trees, 7,279 shrubs, and 1,150 cuttings on 16.5 acres and 8,000 wetland plants on 1.5 wetland emergent acres.

- **Balch Creek:** Planted 2,120 trees and 1,284 shrubs on 2.5 acres. Conducted activities to remove invasive English ivy.

- **Willamette River:** Planted 12,460 trees, 17,048 shrubs, and 12,050 cuttings on 14.1 acres and 6,900 wetland plants on 5 wetland emergent acres.

- **Downspout Disconnect Area:** The CSO downspout disconnection program provides some plant material to homes that disconnect. During permit year 5, 1,710 homes were disconnected.

- **Forest Park Natural Resource Management Plan:** The plan is being implemented to restore old-growth forest and remove invasive species. Conducted activities to remove invasive English ivy.

Carbon Dioxide Reduction Strategy

BES and others continue to sponsor the "Seed the Future" tree planting campaign to plant over 144,000 trees. To date, the City CO_2 strategy is showing signs of reducing per-capita emissions. However, with population increases and an increase in power generation from fossil fuels due to the Trojan plant shutdown, total emissions are still increasing.

EMP (A)

"...A description of structural and source control measures to reduce pollutants from runoff from commercial and residential areas... to be implemented during the life of the permit."

Structural and Source Controls

Although not traditionally considered a structural control, trees are known to intercept rainwater and prevent it from becoming stormwater runoff. They shade impervious areas, reducing heat gain in stormwater runoff. Trees also hold soil in place, thus structurally stabilizing land and creek banks. (See watershed planting activities, above.)

EMP A(2)

"A description of planning procedures to develop, implement and enforce controls to reduce the discharge of pollutants from municipal separated storm sewer systems discharges from areas of new development and significant redevelopment. Such plans shall address controls to reduce pollutant discharges after construction is complete."

City Code Chapter 17.38, Drainage and Water Quality (Public Works Code)

Trees, shrubs, and other landscape requirements have been included in the new Stormwater Management Manual for projects that fall under the 17.38 code.

City Code Chapter 33.430, Environmental Zones (Zoning Code)

The Planning Bureau reviews new development plans to ensure preservation of native vegetation, and requires mitigation where vegetation is approved for removal.

City Code Title 33, Environmental Zones

Application of specific landscape standards is required for development.

NEPA Plan Review

See BMP ND5 (previously under ND3).

CHALLENGES AND SOLUTIONS

Financing is always a challenge. One of the responsibilities of the Urban Forestry Coordinator is to secure grants and other funding. Funding for research may prove difficult to obtain, but potential agency partners are being sought.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. In the first permit term program, STR3 focused on mitigating stormwater impacts through implementing tree planting programs. This BMP has been refocused on implementation of the Urban Forest Management Plan to provide maximum mitigation of stormwater impacts on riparian areas and to reduce urban heat effects on receiving waters. These elements fit more closely with those in the Planning Standards category. The City has therefore moved and renamed this as BMP PS3.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Research and document water quality benefits of trees in identified area, and provide information to others.

- Adopt revisions to Title 33 to implement new parking lot design requirements.

- Review BES and other bureau specifications and standards to identify how bureaus can provide more tree planting on various types of City projects. This is especially important in light of the many temperature issues in most of Portland's waterways.

- Continue participation with other bureaus in implementing the multiple facets of the Urban Forestry Master Plan.

- Continue the City tree inventory, and identify tree-deficient areas.

- Continue to identify, prioritize, and fund projects to correct tree-deficient areas.

- Implement the new tree protection and replacement regulations.

- Continue and expand the Revegetation Program to replant 400 acres in FY 00-01.

- Work with the Parks Bureau to review and revise the City's "Approved Street Tree List" to include more native trees by implementing demonstration projects..

STR4	Establish design standards for flood control and water quality facilities

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Review and modify existing design standards for drainage/flood control and water quality facilities to improve water quality.

DESIRED OUTCOME(S)

Improve existing design standards to address water quality and other City imperatives. Identify, investigate and test innovative and economical techniques for water quality improvement.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY99-00)

Accomplishments

- Continued testing the swales at the Water Quality Laboratory and at the Johnson Creek Brookside project.

- Concluded testing the Parkrose School swale. (See Early Action Projects.) FY 1999-00 was year 3 of this 3-year monitoring project.

- Worked with more than 25 developers to construct water quality landscape planters, eco-roofs, and other innovative landscape techniques. Projects completed in year 5 include:

  - Buckman Heights Apartments (northeast Portland): Incorporates infiltration planters, parking lot landscape strips, and a courtyard water garden to manage all stormwater from the 30,000-square-foot roof and 9,000-square-foot parking lot

  - Reed College parking lot and roof downspout disconnect retrofits

  - Grant High School bioretention garden

- Continued to research benefits of eco-roofs (roofs covered with a thin layer of soil and vegetation), in cooperation with PGE and others. Set up a monitoring program and installed flumes for water quality monitoring and a HYDRA system rain gauge to measure rainfall amounts

- BES is developing an eco-roof program and is working in partnership with PDC and others on two multi-family housing projects. The eco-roof on the downtown Hamilton Building was constructed September 1999 and is now ready for monitoring. The 1,200-square-foot eco-roof at Buckman Terrace, a mixed-use development in northeast Portland, was constructed in March 2000.

- Continued to investigate other stormwater research in North America.

- In August 1998, BES and PDOT set up a work committee to develop right-of-way design standards that will provide better stormwater management, especially water quality. Results of the committee's work indicate that further attention to specific design details is warranted, and another group is being set up this year.

- Continued research on "building green," including the benefits of eco-roofs to retain, detain, and mitigate stormwater runoff. This work is being coordinated with other interests, such as the Portland Energy Office and PGE. Eco-roofs and roof gardens have been included in the Stormwater Management Manual as stormwater management techniques.

- Implemented new stormwater management design criteria (see BMP ND5).

Significant Changes/Improvements from Year 4

None

Comparison with Projected Accomplishments

- Revisions to the Sewer Design Manual and citywide Development Review Manual were not completed in permit year 5. Instead, resources were focused on revising stormwater design criteria and approaches in the Stormwater Management Manual (see ND5) and on revising the Erosion Control Handbook (see ND4).

Compliance Status

In compliance

RELATED EMP STATUS

EMP (A)

"...A description of structural and source control measures to reduce pollutants from runoff from commercial and residential areas...to be implemented during the life of the permit."

Structural and Source Controls

EMP (A)(1)

"... maintenance activities and schedule for structural controls..."

See description under BMP OM1 and OM2.

EMP A(2)

"A description of planning procedures to develop, implement and enforce controls to reduce the discharge of pollutants from municipal separated storm sewer systems discharges from areas of new development and significant redevelopment. Such plans shall address controls to reduce pollutant discharges after construction is complete."

- ***City Code Chapter 17.38, Drainage and Water Quality (Public Works Code)***
- ***City Code Chapter 33.430, Environmental Zones (Zoning Code)***
- ***City Code Chapter 33.515, Columbia South Shore Plan District (Zoning Code)***
- ***City Code Chapter 33.840, Hazardous Substances Review***
- ***NEPA Plan Review***
- ***Stormwater Discount Program***

EMP (A)(4)

"...procedures to assure that flood management projects assess the impacts on water quality...structural flood control devices have been evaluated...provide additional pollutant removal..."

Drainage and Stormwater Quality

- **Johnson Creek:** Continued predesign activities.

- **Willamette River:** Predesign activities are underway. Many projects will result in the creation of new stormwater-only areas and some new outfalls.

- **Fanno Creek**: BES Contributed $300,000 to the Unified Sewerage Agency's flood management and water quality project just downstream of Portland's jurisdiction.

CHALLENGES AND SOLUTIONS

See BMP ND5 for a discussion of challenges related to establishing new water quality requirements for new development and redevelopment.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. This BMP has been renumbered as STR2 and updated to include implementation and evaluation of demonstration projects.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Form committee to evaluate and determine if stormwater quality facility design standards should be revised to address spill containment. This activity will be coordinated with ILL1.

- Monitor eco-roofs constructed in permit year 5.

- Continue implementation of eco-roof program.

- Identify, evaluate, and prioritize monitoring needs for innovative landscape/stormwater management approaches.

PS1	Modify landscape requirements to encourage use of self-sustaining vegetation

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Modify landscape requirements for various land uses to encourage use of self-sustaining vegetation which reduces the need for pesticides, herbicides, fertilizers, and water.

DESIRED OUTCOME(S)

Promote and facilitate, through a combination of administrative, regulatory, technical and incentive approaches, sustainable urban development that improves and maintains water quality and is consistent with "Sustainable City Principles."

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Completed technical work regarding landscape and parking lot requirements. Based on this evaluation, drafted modifications to Title 33 parking and landscaping requirements to support integration of stormwater management into parking area design and help reduce impervious surfaces in parking lots. The code revisions will increase shading of the allowed impervious surfaces and, in conjunction with revisions to the Stormwater Management Manual, require more flow of stormwater, especially small storms, into vegetated areas.

- Drafted revisions to the Stormwater Management Manual to require stormwater management in parking lot landscaped areas. These standards provide stormwater management as a component of the landscape required by Title 33. (See BMP ND5.)

- Drafted revision to Stormwater Management Manual to require the use of mitigation measures, such as vegetative filters and trees, to address stormwater impacts. (See BMP ND5.)

- 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. (See BMP STR 3.)

- Implemented new code to require street trees and trees on private property when certain development is proposed. This includes provisions to protect existing trees and set up a tree fund. (See BMP STR3.)

Significant Changes/Improvements from Year 4

None

Comparison with Projected Accomplishments

Code revisions related to parking lot standards in Title 33 were approved by the Planning Commission and are expected to go to City Council in late summer 2000.

Compliance Status

In compliance

RELATED EMP STATUS

<u>EMP (A)(1)</u>

"*...maintenance activities and schedule for structural controls...*"

See BMP OM1 and OM2

<u>EMP A(2)</u>

"*A description of planning procedures to develop, implement and enforce controls to reduce the discharge of pollutants from municipal separated storm sewer systems discharges from areas of new development and significant redevelopment. Such plans shall address controls to reduce pollutant discharges after construction is complete.*"

City Code Chapter 17.38, Drainage and Water Quality (Public Works Code)

See BMP ND5

City Code Chapter 33.430, Environmental Zones (Zoning Code)

Continue distribution of the Planning Bureau's Environmental Handbook. The handbook provides information to help project designers and property owners

with properties within the E-zone. It includes extensive information on site design and native plants and some information about stormwater management.

City Code Chapter 33.515, Columbia South Shore Plan District (Zoning Code)

Landscape and site design standards exist for plan districts. Standards that integrate and improve stormwater management are being implemented at Portland International Center/Cascade Station. Other plan district standards have been reviewed for stormwater impacts, but not modified.

City Code Chapter 33.840, Hazardous Substances Review

See BMP ILL 1

Stormwater Discount Program

See BMP ND5

<u>EMP (A)(6)</u>

"....reduce to maximum extent practicable (MEP) discharges from MS4s of pesticides/herbicides/fertilizers (p/h/fs)...."

State Certification

The State of Oregon still requires commercial and public facility applicators to be certified. The Parks Bureau has a certification program for its staff and contractors that meets the state requirements. Other City staff can take the Parks Bureau certification course.

City Activities

The Parks Bureau continues to improve its Integrated Pest Management Program and has modified some practices for better aquatic protection. (See BMPs OM1 and OM2.) BES continues to implement a *Naturescaping for Clean Rivers Program* that at this time primarily addresses existing development. (See BMP PI1/ED1.)

Education

Metro has an Alternatives to Pesticides Program. (See BMP PI1/ED1.)

CHALLENGES AND SOLUTIONS

One of the most significant challenges of this BMP is the tremendous amount of marketing and misinformation produced by the pesticide industry. Some of the public education activities under BMP PI/ED target the reduction of public use of these products.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. PS1 and PS2 activities will continue in the second permit term. These activities focus on reviewing and modifying City codes to mitigate impervious surfaces, maximizing self-sustaining landscapes and vegetative cover (PS1), and implementing incentives for protecting and preserving privately owned natural areas (PS2).

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Continue technical review of code requirements to identify water quality impacts.

- Submit recommended code changes for Planning Commission action. Following Planning Commission action, prepare approved policy and code changes for City Council approval.

- Review landscape requirements of all plan districts not covered by the Planning Bureau's landscape standards review.

- Implement new codes.

PS2	Evaluate use of financial incentives for protection of natural areas

STORMWATER MANAGEMENT PLAN DESCRIPTION(S)

Evaluate practicability of providing financial incentives for property owners who protect natural areas considered to have valuable water quality characteristics.

Research what other agencies are doing relative to providing financial/other incentives for the protection of natural areas, and consider developing a similar program for Portland.

DESIRED OUTCOME(S)

Promote and facilitate, through a combination of administrative, regulatory, technical and incentive approaches, the preservation and protection of natural areas consistent with "Sustainable City Principles."

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 4 (FY 99-00)

Accomplishments

- Revised the stormwater management mitigation credit system under BMP ND5.
- Continued work on the stormwater fee structure for stormwater discounts. (See BMP ND5.)
- Developed agreements with some of the property owners in the Revegetation Program and other watershed-specific projects where the owners will ensure that the projects and related natural areas are preserved and maintained.
- Took the following actions under watershed programs:

  Johnson Creek: Purchased approximately 17acres of floodplain.

  Tryon Creek and Fanno Creek: Purchased 13 acres, 1 along the creek

  Metro Open Spaces and the City purchased a total of 52 acres during this fiscal year. Since the beginning of the permit, a total of 2,116 acres have been purchased.
- Began revising stormwater monthly fees to include credits for trees.

- Implemented a tree protection and planting ordinance.

- Began implementing a site stormwater design credit system to protect existing trees when properties are redeveloped or newly developed.

Significant Changes/Improvements from Year 4

None

Comparison with Projected Accomplishments

Accomplishments correspond with the projections.

Compliance Status

In compliance

RELATED EMP STATUS

EMP A(2)

"*A description of planning procedures to develop, implement and enforce controls to reduce the discharge of pollutants from municipal separated storm sewer systems discharges from areas of new development and significant redevelopment. Such plans shall address controls to reduce pollutant discharges after construction is complete.*"

City Code Chapter 17.38, Drainage and Water Quality (Public Works Code)

City Code Chapter 33.430, Environmental Zones (Zoning Code)

See BMP PS1 and ND5 EMP

Stormwater Discount Program

See BMP ND5

CHALLENGES AND SOLUTIONS

Land use issues are highly charged in Portland at this time. There is a perceived conflict of this BMP with Metro 2040 and City development density goals.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The permit renewal for the second permit cycle (submitted to DEQ in February 2000) includes proposed BMP modifications. PS1 and PS2 activities will continue in the second permit term. These activities focus on reviewing and modifying City codes to mitigate impervious surfaces, maximizing self-sustaining landscapes and vegetative cover (PS1), and implementing incentives for protecting and preserving privately owned natural areas (PS2).

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Coordinate with Metro and other City Bureaus to address conflicting land use goals.

- Continue to purchase land for stormwater management and natural resource protection, and work with property owners to protect existing natural areas.

- Implement Stormwater Management Manual requirements to use mitigation measures (including tree planting and protection) for stormwater management.

EARLY ACTION PROJECTS

In 1994, prior to issuance of the NPDES permit, the City elected to conduct a number of early action projects. These are projects that were not specifically named in the Part 2 NPDES permit application, but are considered essential for pilot testing and demonstrating certain program elements before valuable resources are used to apply the controls citywide. Accomplishments of the early action projects undertaken to date are described below.

Parkrose Area Pilot Project (NE 122nd Avenue)

Completed and closed out.

Parkrose Sand Filter (NE 121st Avenue)

DESIRED OUTCOME(S)

To test the water quality benefits of retrofitting an existing conveyance facility with a large sand filter. To retrofit the site's temporary wildflower landscape with permanent native vegetation. To monitor the site for water quality improvements.

KEY ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Implemented full construction of the project within permit year 5.
- Began implementation of the new vegetation scheme.

Comparison with Projected Accomplishments

This is a new, stand-alone project. It used to be a pair of facilities, comprising a swale and sand filter. The swale did not prove to be cost effective and was eliminated from further effort.

CHALLENGES AND SOLUTIONS

Delays with City staffing to support the design effort have been the biggest challenge. The project was finally put out to bid and constructed.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Implement the project and associated vegetation scheme.

Russell Pond/Wetland

DESIRED OUTCOME(S)

To improve water quality benefits of the existing pond/wetland system by retrofitting flood control and site landscape components. To involve interested nearby neighbors and high school students in site research and possible retrofit projects at the existing pond site.

KEY ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

Accomplishments

- Completed all project design and substantially completed construction bid documents. Slated for retrofit in August 2000.

- Completed initial invasive plant species removal within the designated property. Also began some new native plant establishment outside of work areas for daylighted swale and pond excavation.

Comparison with Projected Accomplishments

- Still behind schedule on project implementation.

- Plans currently contain a bird-watching observation mound in the northwest corner of the site.

CHALLENGES AND SOLUTIONS

Delays with City staffing to support the design effort have been the biggest challenge. The design is now being prepared for outside construction bid.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Implement the project and associated vegetation scheme.

Oregon Museum of Science and Industry (OMSI)

DESIRED OUTCOME(S)

To evaluate the performance of the vegetated bioswales in the OMSI parking lots and implement improvements to enhance the pollutant removal capability of the system.

KEY ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

- Evaluated the swales and determined that problems associated with the Water Avenue expansion should be corrected before any monitoring is conducted.

CHALLENGES AND SOLUTIONS

Impacts from the Water Avenue project have significantly changed the OMSI site. Although Water Avenue was improved with landscape medium and trees, some of the new portion of the OMSI parking lot are not functioning as well as the older portions .

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Discuss with OMSI the potential of structurally correcting portions of the swales to improve performance and correct design flaws caused by Water Avenue.

BES Water Pollution Control Laboratory

DESIRED OUTCOME(S)

Evaluate the water quality and quantity approaches integrated into the project design.

KEY ACCOMPLISHMENTS, PERMIT YEAR 5 (FY 99-00)

This project was completed in year 3. BMP monitoring of the swales and pond is ongoing under the Stormwater Monitoring Plan.

CHALLENGES AND SOLUTIONS

Plan reviewers were not familiar with approaches.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

Continue monitoring and potentially modify aspects of the facilities that can be improved for water quality.

GOBI Park Projects: Custer Park

DESIRED OUTCOME(S)

Incorporate water quality designs with as many projects as possible.

KEY ACCOMPLISHMENTS, PERMIT YEAR 5 (00-01)

Although numerous projects were considered during the 3-year GOBI efforts, the Custer Park swale retrofit was the most significant project that was constructed. BES is continuing to visually monitor the project and may set up flow and sampling equipment in the future.

CHALLENGES AND SOLUTIONS

The Bureau of Parks and Recreation was required to design and build its projects within a very limited timeframe. Since water quality was not a requirement and many of the designers did not have experience, it became a delaying factor for the bureau.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 00-01

- Determine whether or not to initiate swale monitoring.

Section III

MULTNOMAH COUNTY

Multnomah County
Municipal NPDES Annual Report for Permit Year 5
City of Portland and Co-Permittees
Permit #101314
September 1, 2000

MULTNOMAH COUNTY STORMWATER MANAGEMENT PROGRAM

Multnomah County implements a comprehensive stormwater management program county-wide with the goal of controlling water quality and quantity and to reduce pollutants in stormwater runoff to the maximum extent practicable. This 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, in this case, by proactively improving water quality impacts to our streams and rivers. The success of the program is due to staff dedication to "Best Management Practices" required under the Act, regional enthusiasm for the effort, and continued support of managers and elected officials.

Multnomah County is a Co-Permittee to the Municipal NPDES Permit issued by Oregon's Department of Environmental Quality (DEQ) September 7, 1995 because it owns and operates a small portion of the Municipal Separate Storm Sewer System (MS4) within the Portland Urban Services Boundary which is the permit boundary. This Compliance Report for Permit Year Five (PY5) (Annual Report) of the Five-Year Municipal National Pollutant Discharge Elimination System (NPDES) Permit documents the implementation activities of Multnomah County's Stormwater Management Program (Program) in the Portland NPDES permit area as well as some activities outside this permit area. The Program consists of management tasks submitted by the County and approved by the DEQ. Multnomah County began the stormwater management program in 1991 when it actively participated in the three-year planning process with the City of Portland and Co-Applicants to develop the Parts 1 and 2 co-applications, which became the basis of the NPDES permit conditions. Most of the County's roles and responsibilities for complying with the permit terms fall under implementation of the Stormwater Management Plan (SWMP) as Best Management Practices (BMPs) rather than duties toward monitoring, education, or industrial discharges, although financial support to the City for those activities is satisfied through an intergovernmental agreement (IGA). The fifth permit year covers SWMP activities from July 1, 1999 through June 30, 2000.

Background

The Portland Stormwater Program was initiated to comply with federal municipal NPDES regulations for municipal stormwater discharges (40 CFR 122.26(d)), issued by U.S. EPA in November 1990. These regulations required submittal by May 1993 of a two-part application for a NPDES municipal stormwater permit for discharges to waters of the U.S. from the Municipal Separate Storm Sewer System (MS4). Following acceptance of the permit application, the Oregon DEQ issued a municipal NPDES permit to all co-permittees on September 7, 1995. The initial term of the permit is five years, with expected renewal every five years thereafter.

Prior to issuance of the municipal NPDES permit, Multnomah County recognized the importance of educating County personnel who would collectively be responsible for ensuring permit compliance. In the Fall of 1993, the County's Stormwater Implementation Team was formed, consisting of technical and policy consultants and lead County staff. County Implementation Team members represent necessary 'functional groups' (See Functional Groups section, below) responsible for specific BMP implementation tasks, and are almost entirely from the County Department of Environmental Services (DES), Transportation Division, and Land Use Planning Division.

This Team produced a Five-Year NPDES Stormwater Management Implementation Plan (1995) to provide guidance for program implementation. The plan describes the BMPs and activities, defines roles and responsibilities for the County and other co-permittees, presents the schedule and budget, describes reporting requirements, and suggests measures for evaluating the BMPs. An important component of the implementation plan is a series of reporting forms created for use by County field staff and supervisors to track program compliance and to measure success.

Following completion of the Implementation Plan, a series of work sessions were held with the entire Implementation Team to introduce and describe the use of the plan, as well as to complete quarterly reports where feasible. These reports, now semi-annual, along with the compilation of data from 14 other reporting forms/logs are organized into individual BMP files and are primarily used to prepare the accomplishments section of this Annual Report and to evaluate and monitor the progress to date of the program.

Co-Permittee Role of Multnomah County

The County joined the City of Portland (lead applicant) and five other co-applicants in 1991 to begin the 3-year process to prepare and submit the two-part NPDES permit application. This permit application was accepted by Oregon DEQ and a permit to discharge municipal stormwater was issued September 7, 1995. The five other co-permittees are the Port of Portland, Oregon Department of Transportation (ODOT), Multnomah Drainage District No. 1 (MDD #1), Peninsula Drainage District no. 1 (PEN 1), and Peninsula Drainage District No. 2 (PEN 2). In PY4 ODOT requested review by DEQ of a new statewide permit for ODOT, effectively removing that agency as a co-permittee to the six municipal NDPES permits. Each of the participating agencies owns and/or operates a portion of the MS4 within the Portland Urban Services Boundary. Additionally each of the agencies discharges stormwater into another agency's system, and/or receives discharges from another agency's system into its own. Multnomah County is a co-permittee to the Portland Municipal NPDES Permit No. 101314 due to a small percentage (about 1-2% of total permit area) of unincorporated land within the Portland Urban Services Boundary, and the fact that it owns or operates minor portions of the MS4. When the Part 2 co-application was submitted in May 1993, unincorporated County lands within the Portland NPDES permit boundary were much larger, and covered several thousand residents, mostly in SE Portland. Since then, most of these lands have been annexed to the City of Portland (December 1994). This compliance report incorporates those changes and diminished area of responsibility. Since 1997, Multnomah County and the City of Portland's Department of Transportation (PDOT) operate under an intergovernmental agreement known as the Westside Maintenance Agreement. This contractual arrangement provides for road maintenance activities by PDOT in unincorporated Multnomah County, primarily the area known as "Dunthorpe." The City agrees to maintain the County-owned road system to the same level of NPDES implementation as that used by PDOT throughout the rest of the Portland permit area.

These changes have not affected the overall intent of each Best Management Practice although several BMPs are no longer applicable due to the annexation. The County continues to implement an active Stormwater Management Program which has resulted in new stormwater maintenance practices, improved communication between Maintenance, Planning and Design staff on stormwater facility and drainage issues, new levels in field staff awareness of the importance of source control, and improved considerations in contract requirements for activities in road building and design which may impact the MS4. The PY5 Annual Report documents, in summary form, the high level of effort in meeting the Program requirements.

County Accomplishments of First Five-Year Permit Term

The first 5-Year permit term accomplished much in the identification of stormwater pollution sources, evaluation of existing best management practices (BMPs), implementation of improved BMPs, and constant reevaluation of effectiveness and efficiency in the implementation of these source controls. Key accomplishments of the Stormwater Management Program have been identified in the Annual Reports submitted to DEQ in September each year. Highlights include:

- BMPs were identified and selected among all co-permittees. Co-permittee coordination continued during all 5 years through monthly co-permittee management meetings.

- The *Five-Year Implementation Plan for the Multnomah County Stormwater Permit Program* was published, and was updated and revised as it was implemented. An Implementation Team of 14 County representatives met three to five times per year for evaluation, reporting, and constant improvement to program areas.

- Erosion control BMPs were implemented, and training was conducted at various levels. Contract specifications were changed to implement ODOT's 00280 erosion control measures for road-building projects. County maintenance crews implemented innovative ways of ditch maintenance, truck hauling methods, no-oil release methods, and new vegetative management practices.

- Public education and public involvement programs, through new Watershed Councils, became more important than ever and increased awareness of stormwater pollution effects. Multnomah County joined the Coalition for Clean Rivers and Streams.

- The Multnomah County Engineering/Design group incorporated water quality considerations whenever possible. For example, developers are required to install pollution plates on new inlets; revegetation and stabilization of cut and fill disturbed areas is required; and landscaping materials which require less use of pesticides became a standard requirement in design of road projects.

- During the first five-year permit term, a Vegetation Management specialist was assigned full time to managing vegetation in the right of way. This staff created a more manageable right of way through innovative growth control methods. A new metered system for application of herbicides has greatly

reduced the previous amounts used to control right of way growth for safety and visibility on the roadways.

- The County continued to prohibit the use of salt as a de-icing agent on roadways. Staff experimented with spill adsorption products for hydrocarbon-based spills to reduce the need for sand or kitty litter, which may inadvertently enter the MS4.

- Grading and erosion control permits requirements were established to ensure appropriate water quality controls are used for proposed new construction projects. Enforcement was enhanced, with training workshops for inspectors, reviewers, and maintenance crews.

- The right-of-way permits required cash deposits as performance payment bonds to ensure compliance with erosion control requirements. Some requirements included wash racks, wash stations, graveled entrances, additional street sweeping, and hay bales.

- A new chemical application truck was adjusted to minimize dispersal of necessary herbicides during roadway safety maintenance. Crews became aware of the intent to minimize application, and went to spot weeding and selective herbicide use for roadside maintenance.

- County road maintenance crews implemented a system for tracking and correcting water quality problems observed during routine maintenance operations. Field logs were developed and utilized for reporting specific activities. For example, street sweeping, catch basin cleaning, sump repair, mowing, etc. are reported and entered into an automated database for compiling field log information, to assist in the annual reporting process and to identify areas of effectiveness.

- The County improved routing procedures, and increased frequency of street sweeping operations to reduce pollutants carried in storm water to the MS4. Sump maintenance frequency was increased, and many sumps have been retrofitted with lids for better maintenance.

- County Transportation Division personnel and supervisors attended more water quality and environmental conferences, many with focussed emphasis on stormwater impacts of their daily operations. Staff returned from each conference with new information for consideration to enhance the stormwater management program.

- Emergency response personnel attended regional meetings geared towards eliminating impacts to receiving streams, (e.g., spill response procedures, hazardous materials handling).

- County staff participated in an ongoing statewide Technical Advisory Committee with ODOT to solve problems related to disposal of road waste materials.

- A Vegetation Management Manual is underway with the primary objective of reducing herbicides currently necessary for operations and maintenance. Plant materials testing has been accomplished, and is continuing, to find vegetative solutions for the rights-of-way which would both filter stormwater and reduce the need for maintenance.

- Structural controls were reviewed for consistency with the intent of the Stormwater Management Program; pollution control manholes were used more frequently if installed near a waterway.

- The County Transportation Division worked with County Vector Control to successfully reduce illegal dumping, through increasing enforcement by nuisance control officers.

- The Emergency Response personnel instituted an environmental contract with Foss Engineering for better and proper cleanup following accidents or natural disasters.

Best management practices for the second 5-year permit term are intended to build on the successes accomplished in the first permit perm, and are designed to adjust and adapt as improvements in systems are identified. The BMPs are organized under eight categories that are common to all the co-permittees. Under each category, Multnomah County has identified its own BMPs. In this way, the BMP definitions closely match what is actually occurring in the field and the County operations.

- Public Involvement and Education (PI)
- Operations and Maintenance (OM)
- Industrial/Commercial Controls (IND)
- Illicit Discharges Control (ILL)
- New Development Standards (ND)
- Structural Controls (STR)
- Planning System Preservation and Development (PS), and
- Other Activities (OA).

Program Activities: Best Management Practices (BMPs)

The Multnomah County municipal NPDES stormwater permit program within the Portland NPDES permit area encompasses two main elements: Best Management Practices (BMPs) and Other Activities (OAs) necessary to meet regulations and run the program, as described below.

BMPs are source or treatment controls designed to reduce pollution in stormwater. *Source* controls are practices or devices which keep pollutants out of stormwater runoff in the first place, such as routine inspection and maintenance practices or covers for outdoor storage areas. *Treatment* controls are typically structural devices designed to temporarily store or treat stormwater runoff to remove pollutants that have already entered the stormwater. Examples include detention basins and grassed biofiltration swales. EPA requires that the County's stormwater program include both source and treatment controls, as well as structural and non-structural controls. However, the EPA recognized that municipalities would focus on source controls for the first 5-year permit period until the stormwater pollution problems can be better defined. The County Program outlined in this implementation program therefore emphasizes cost-effective source controls, most of which are non-structural in nature.

Implementation of the 20 County BMPs and OAs described in the Portland permit began in 1994. The County's Stormwater Management Plan in the Part 2 NPDES permit application describes each of these BMPs in detail. Key accomplishments for each BMP activity are listed in this compliance report in table/matrix form. The County/Portland BMPs are grouped into seven implementation categories:

- **(1) Public Involvement and Education (PI and ED)**
- **(2) Operations and Maintenance (OM)**
- **(3) Industrial/Commercial Controls (IND)**
- **(4) Illicit Discharges Control (ILL)**
- **(5) New Development Standards (ND)**
- **(6) Structural Controls (STR), and**
- **(7) Planning/System Preservation and Development (PS).**

The following provides an overview description of the County BMPs in each category. The BMPs apply to the unincorporated land and the County-owned roadways and associated storm drainage system within the Portland permit area.

- **Public Involvement and Education (PI and ED)**

  The County's participation in public involvement and education activities is limited due to the small amount of unincorporated land and associated residents within the Portland NPDES permit area. During Permit Year Five (PY5), the County actively participated in the "Regional Coalition for Clean Rivers and Streams" and a new public communication regional committee, FISHCOM. For the most part, the residents in the permit area are informed of impacts to the storm drainage system through the Coalition's educational efforts via mass media (radio, movie ads, newspaper) and direct mailing. County staff are encouraged to attend and participate in stormwater workshops and meetings sponsored by the City and other local agencies.

  County representatives attend Watershed Council meetings and actively participate on several regional committees as part of the public involvement element. Although outside the Portland permit area per se, the M.C.TRANS newsletter is sent to 45,000 residents of unincorporated County and Cities east of Portland. This newsletter informs the public of transportation activities and includes educational elements of water quality issues.

- **Operations and Maintenance (OM)**

  Best Management Practices (BMPs) have been conducted by the County to address stormwater quality impacts from routine operations and maintenance activities. The County's Stormwater Maintenance 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 in tracking progress of the maintenance program and evaluating effectiveness over time. The County staff are continuing daily recordkeeping and are meeting reporting requirements.

  The County contracts with the City of Portland for operation and maintenance of storm drainage facilities associated with roadways in the unincorporated pockets of land within the westside Portland Urban Services Boundary (USB). Computerized inventories of drainage and road appurtenances are maintained by both organizations.

  County staff assess the effectiveness of road maintenance activities and adjusts methods and/or frequencies as needed to improve stormwater

quality. The Road Maintenance field logs are entered into the NPDES database system to document events, routine maintenance activities, and potential pollution problems.

The County implemented a separate computerized NPDES database to collect information recorded daily on field logs. All events are recorded by County road number, date, and type of work activity or findings of the field crew. Special database fields alert staff for follow-up investigation, such as when heavy litter or oil is sighted in ditches. The database has a wide range of custom querying and report generation. This includes annual totals, such as number of street miles swept or the total cubic yards of catch basin debris collected. The database has been used to prove date and time activity in enforcement action against a discharger, and what kind of activity was noted. Over time, performance trending and maps can be generated to identify specific areas for improvement.

- **Industrial/Commercial Controls (IND)**
  The County BMPs for industrial and commercial facilities in the Portland NPDES permit area are no longer applicable to Multnomah County due to large annexations of County land by the City of Portland in 1994-95.

- **Illicit Discharges Control (ILL)**
  County representatives participate in the Interagency Spill Response Committee, lead by the City of Portland. Through this committee, the County reviews and comments on the coordination procedures intended to improve communications and response time in the event of a discharge which could adversely impact stormwater runoff.

- **New Development Standards (ND)**
  The County reviews plans for new private development/redevelopment in the unincorporated portions of the Portland permit area, which are largely residential (e.g., Dunthorpe area in Southwest Portland). The County utilizes the same stormwater design guidance used area-wide by design professionals. Water quality standards are incorporated into the process, as appropriate, as they are adopted by the City of Portland. The County continues to implement its construction bond program, which ensures financial recovery for damage to County right of way or associated drainage facilities, including erosion damage.

The County is involved with review of public improvement plans for right-of-way in the Portland NPDES permit area when it involves a County road. For these public improvements, standards established by the Oregon Department of Transportation are generally referenced in all plans and contract specifications. The new 00280 ODOT specifications include stringent requirements for erosion control and on-site inspection.

- **Structural Controls (STR)**
  The County considers the City of Portland's proposed new or retrofitted public structural stormwater quality facilities within the Portland NPDES permit area. If any of the proposed new or retrofit facilities are within the County's jurisdiction, they will be considered for construction as part of a 5-year Capital Improvement Program (CIP). If favorable, a project detail sheet will be developed to describe the schedule and funding for each project. Stormwater impacts and activities related to the projects currently included in the Multnomah County 5-year Capital Improvement Program will be described and evaluated for compliance with the permit.

  The County will review the City of Portland's stormwater quality design storm standards proposed by the City Technical Advisory Committee. Trees and landscaping requirements will continue to be a part of all County improvement projects.

- **Planning/System Preservation and Development (PS)**
  The County continues to update inventories and maps of the County's storm drain system. In 1997-98 old maps were replaced with new updated versions. Working with these new maps, a field verification program began in PY4. For areas within the Portland USB, the County relies on the City of Portland to evaluate and revise existing landscape standards to encourage landscaping which reduces the need for pesticides and herbicides. Information developed by the other local agencies (e.g., City, Metro) regarding safe alternatives to yard care products will be distributed as available.

Program Activities: Other Activities (OAs)

The County implemented several other activities (OAs) required by the NPDES regulations to ensure the proper management and success of the program. Those activities are described in detail in the Five-Year Implementation Plan. In general, they include:

- Program Development and Management
- Program Assessment and Evaluation
- Monitoring Program and Annual Water Quality Report
- Seasonal Pollutant Loadings for Major Outfalls.

- **Program Development and Management (OA1)**

  These are various administrative and management tasks needed to ensure successful implementation of the program. Tasks include:

  - Participating in the development and negotiation of the NPDES Permit conditions;
  - Developing and executing intergovernmental agreements (IGAs) with the other permittees;
  - Overseeing modifications to the stormwater management plan and NPDES permit conditions on behalf of the County;
  - Compiling and reviewing internal reports;
  - Writing and submitting the annual compliance report;
  - Coordinating and communicating with the other permittees and the City;
  - Attending and facilitating meetings;
  - Liaison with DEQ;
  - Overall budget and schedule tracking; and
  - Conducting Stormwater Implementation Team workshops at the County at least three times per year.

- **Program Assessment and Evaluation (OA2)**

  The NPDES regulations require each of the co-permittees to annually evaluate the success of their program and the effectiveness of the various activities being implemented. In addition to satisfying the regulations, this process provides information to key County staff and decision makers which enables them to reallocate resources and staff as appropriate.

  The County Stormwater Implementation Team met 3 times at 2-4 hour work sessions in PY5 to refine and review program implementation progress. This team also completes semi-annual assessment forms for each BMP.

- **Monitoring Program and Annual Water Quality Report (OA3)**
  The NPDES regulations require that the co-permittees continue to collect stormwater data during the permit compliance period as a means of augmenting existing data and providing data that will help measure the effectiveness of BMPs and/or identify sources of pollutants to the MS4. The County negotiates IGAs with the lead permittee to conduct most of this work. As modifications to the monitoring program occur, the County reviews changes and incorporates these into agreements. Additional monitoring may be conducted specifically for the County by consultants as the need arises.

- **Seasonal Pollutant Loadings for Major Outfalls (OA4)**
  The County is required to estimate the seasonal pollutant loadings for the major outfalls it owns within the NPDES permit areas. Since the Part 2 application was submitted, it has been determined that the County no longer owns major outfalls in the Portland USB subject to this permit.

Functional Groups

Managers and staff in the Multnomah County Department of Environmental Services, Transportation Division and Land Use Division implement the Stormwater Management Program (SWMP). Additionally, the County hired policy and technical consultants to assist in the management and implementation of the plan. The County Implementation Team meets regularly over the permit year to ensure compliance tasks are on schedule and are conducted according to plan. The Team includes Transportation Division Managers, Road Maintenance District Supervisors, the County Engineer, the County Emergency Management Administrator, the Planning Director, other County staff, and the technical and policy consultants. To ensure efficient implementation, each team member belongs to a 'functional group' responsible for specific BMPs, as described below.

Functional Group assignments were given to the Implementation Team to ensure active participation by the necessary staff and consultants. Assignments were made by matching appropriate staff and consultants to the BMPs directly relating to their duties. For example, the staff Engineer responsible for reviewing stormwater facility design is in the DESIGN functional group, while the staff Engineer responsible for overseeing road building contracts is in the CONSTRUCTION functional group. The nine functional groups are:

- Compliance
- Construction

- Design
- Education
- Emergency Response
- Land Use Planning
- Right-of-Way Permits
- Road Maintenance, and
- Transportation Planning.

Functional group leaders and other Implementation Team members worked together throughout Permit Year 5 in a series of work sessions. The purpose of these meetings was to update tasks and to track progress in satisfying the requirements of the Best Management Practices of the NPDES Stormwater Implementation Program.

The importance of the functional group structure is demonstrated best by an explanation of the PY5 compliance accomplishments for each group.

Functional Group Accomplishments: Permit Year 5

Compliance

General NPDES Roles and Responsibilities for Permit Year 5:	***Key Accomplishments for Permit Year 5***
The Consultant/ Compliance Group is responsible for overall Program Development and Management, Program Assessment and Evaluation, and Program Compliance Reporting.	• Informed Stormwater Implementation Team of Endangered Species Act requirements and relation to NPDES. • Conducted Stormwater Program management, including program implementation coordination with County staff. • Completed intergovernmental agreement with City of Portland for County support and definition of MS4 NPDES permit roles and responsibilities. • Attended all Co-Permittee Management Committee meetings (approximately monthly) and DEQ meetings relating to the Portland NPDES Co-Permit. • Conducted training sessions with new Stormwater Implementation Team members. • Organized and facilitated three Workshop

Sessions with Stormwater Implementation Team to track progress, update reporting information, and train staff in erosion control BMPs.

- Coordinated reporting activities with City of Portland, as lead permittee.
- Evaluated BMP effectiveness and conducted program assessment throughout the year, resulting in Annual Report to DEQ.
- Tracked focus groups to further goals of program:
  - Erosion and Sediment Control
  - Winter Maintenance Practices
  - Road Waste Management
  - Stream Crossing Practices
  - Vegetation Management
  - Truck Hauling Practices
  - Construction Site BMPs

Construction

General NPDES Roles and Responsibilities for Permit Year 5:

County Engineering/ Construction Group ensures through plan checking, education of contractors, specification interpretation, pre-construction meetings, and rigorous inspection and monitoring, that stormwater controls are properly considered, installed, and maintained as part of all public Capital Improvement Projects.

Key Accomplishments for Permit Year 5

- Implemented on-site requirements to include more extensive erosion control measures and continuous on-site monitoring.
- Used Portland's Erosion Prevention and Sediment Control Plans Technical Guidance Handbook.
- Implemented ODOT's 00280 contract specifications for road-building projects. These measures require a formal pollution prevention plan, a rain gauge on site, weekly site monitoring and more frequent inspection in the event of a 1/2-inch 24-hour storm event.
- Stabilized eroding roadside areas through use of seeding, blanket mats, and other methods.
- Construction contract managers utilized 00280

Stormwater controls include structural and non-structural techniques and practices which will result in reduced pollution.

erosion control requirements for each contract to better control prevention of erosion.

- Ensured road-building projects (which include stormwater facilities) used proper construction techniques to allow benefits to stormwater quality. Includes vegetated ditches, drainage swales, new inlets per County standards.
- Utilized construction inspection checklist including water quality BMPs for pre-construction meetings.
- Inspected erosion control measures (such as silt fences, straw bales, inlet protection) used by Contractors to assure proper installation and maintenance to prevent sedimentation in stormwater system to the maximum extent practicable.
- Educated consultants and designers in stormwater Best Management Practices requirements for County road design projects.

Design

General NPDES Roles and Responsibilities for Permit Year 5:

County Engineering/ Design Group ensures through design of new projects and review of contractor's plans that stormwater and Best Management Practice (BMP) structural controls are considered and properly designed for Capital Improvement Program. They will promote a balance of stormwater quality and quantity (flood control)

Key Accomplishments for Permit Year 5

- Incorporated water quality considerations in all design projects.
- Required developers to install pollution plates on new inlets.
- Required landscaping materials in design of contractor's road projects which will utilize not only low impact landscaping materials, but those which require less use of pesticides and/or herbicides.
- Required revegetation and stabilization of cut and fill disturbed areas.
- Inventoried and updated MS4 map. Continued to

to the Maximum Extent Practicable in considering stormwater facility design.

implement field verification program for PY5.

- Applied engineering criteria to private development plans under the Planning Division's Hillside Development (HD) and Grading/Erosion Control (GEC) permitting process, including considerations of stormwater quality facilities.

Education

General NPDES Roles and Responsibilities for Permit Year 5:

Multnomah County's responsibility for stormwater quality education is two-fold. Public education roles are important but are primarily the City of Portland's NPDES responsibilities for incorporated areas. This change occurred due to the accelerated annexation of SE Portland in 1995. Personnel training within the County Transportation and Land Use Divisions is still important, and is more extensive. Training includes initiating activities to educate and inform County staff about the sources and solutions to stormwater program issues.

Key Accomplishments for Permit Year 5

- County Land Use Planning Division initiated an education/outreach program re: grading and erosion control methods.
- Implemented public process for West of Sandy River Rural Area Plan which include several measures for water quality improvements.
- Published articles to promote general water and stormwater quality issues, and public awareness of stormwater pollution through the M.C.TRANS Newsletter, a quarterly publication sent to 45,000 residents of the eastern portion of Multnomah County.
- Attended Columbia Slough Watershed Council meetings (monthly) and actively participated with public on council committees.
- County representative participated in meetings of the "Regional Coalition for Clean Rivers and Streams" and helped plan educational activities for the year.
- County representative actively participated in Tualatin Basin Public Awareness Committee (outside permit area) to enhance public education and public involvement activities.
- Ensured residents are informed about Capital Improvement Program projects, and associated stormwater facilities, through attendance at public meetings, publication of the CIP

document, and hearings with County Commissioners.

- Attended Johnson Creek Watershed Council meetings.
- Continued training of County personnel for Herbicide Application to minimize impact on stormwater system (licensed applicators only).
- Distributed Multnomah County Stormwater Maintenance Manual for new Road Maintenance personnel as a training and documentation tool.
- Offered Clean Water brochure series to public at both Permits office and County Survey office.

Emergency Response

General NPDES Roles and Responsibilities for Permit Year 5:

County Emergency response personnel will ensure water quality concerns are addressed during emergency procedures. In particular, consider how to prevent materials from reaching the Municipal Separate Storm Sewer System (MS4). Continue to raise awareness of emergency response personnel (in road maintenance group) to ensure general water quality concerns are addressed. Participate in regional Committees

Key Accomplishments for Permit Year 5

- County Emergency manager continued close working relationship with key agency people, including DEQ spill response manager.
- Prohibited use of salt as de-icing material on roadway.
- Emergency management teams and contractors responded with appropriate equipment (containment booms and absorbent materials) involving minor spills, prevented oil from reaching MS4.
- Continued training of County road maintenance staff and administrative staff in quick response to emergency calls regarding spills in right-of-way and recorded individual response activities.
- Participated in regional Emergency Response Committee and HAZMAT teams which meet regularly to coordinate response.
- County road maintenance role and procedures

addressing these concerns to assure necessary coordination between agencies.

in the event of a large scale diesel spill were reviewed in training sessions.

Land Use Planning and Transportation Planning

General NPDES Roles and Responsibilities for Permit Year 5:

County Planning staff will ensure stormwater quality management and maintenance practices are considered in land use zoning and permit requirements and applications. In particular, they will enforce land use zoning and permit requirements which may impact stormwater quality. Determine whether land use planning procedures are in place to encourage sound environmental principles relating to water quality (SEC zones, etc.).
Note: These are practices applied in unincorporated County. They may not have direct applicability in Portland NPDES permit area.

Key Accomplishments for Permit Year 5

- Organized a Task Force that is re-evaluating the County's erosion control standards and procedures. The new streamlined process should lead to more effective implementation and enforcement.
- Enforced Grading and Erosion Control (GEC) and Hillside Develop (HD) permit requirements to ensure appropriate water quality controls were used for proposed new construction projects. Stabilized construction entrances are required to protect roadway.
- Enforced GEC and HD permit requirements by issuance of grading violation citations in this permit area.
- Continued inspection and enforcement activity to ensure compliance with permit conditions including erosion control, buffer zones around riparian areas, and connections to the right-of-way.
- County Planning required landscaping in right-of-way to be able to flourish without the use of herbicides, irrigation or other artificial methods. Bonds are required for 2-year establishment period.
- Required 300 foot setback from designated significant streams in West Hills Rural Area Plan as part of Significant Environmental Concern (SEC) zoning program.

- Required engineering certification of proper design on "hazard slopes."
- Continued to apply minimum 100 foot buffer zone in Tualatin and Balch Creek Watersheds.
- Denied permits to dump fill to applicants who could not demonstrate compliance with erosion control standards.

Permits

General NPDES Roles and Responsibilities for Permit Year 5:

County Permits and Right-of-Way section will ensure stormwater pollution controls are considered and incorporated into permits for private and public construction projects which attach to and are in the County right-of-way. Specify erosion control requirements through contractor bonding for public right-of-way projects. Ensure maintenance will be conducted for life of project and immediate future.

Key Accomplishments for Permit Year 5

- Right-of-way inspectors continued to monitor activities and to report concerns appropriately to maintenance or law enforcement.
- Ensured specifications for contractors include measures for erosion/sediment control during paving operations.
- Monitored utility company permitted activities (for example pavement cuts) in right-of-way to ensure pollutant control measures are utilized such as silt socks, bio-bag filters and immediate pavement restoration.
- Inspected HDP (Hillside Development) and GEC (Grading and Erosion Control) permit holders for compliance with permit conditions involving erosion control.
- Water quality issues remain a top priority for right-of-way inspectors. Continued to work closely with County drainage engineer to correct unauthorized discharges.
- Required cash deposits as well as performance payment bonds for development permits (right-of-way permit) to ensure compliance with erosion control requirements.
- Utilized catchbasin 'sock design' to collect debris and reduce sediment runoff during land-

disturbing activities.

- Continued to monitor and evaluate effects of erosion control on permits and field checked them for compliance. Some of these included wash racks, wash stations, graveled entrances, additional street sweeping, hay bales, etc.

Road Maintenance

General NPDES Roles and Responsibilities for Permit Year 5:

The Road Maintenance section of the County Transportation Division will utilize established road maintenance procedures specifically relating to stormwater quality management. Document maintenance procedures through the Stormwater Maintenance Manual and field logs. Ensure that problems found in the field relating to stormwater quality and stormwater facilities are addressed as quickly as possible, in the appropriate manner.

Key Accomplishments for Permit Year 5

- Began major sump inventory of all County-owned sump facilities.
- Utilized chemical application truck which meters dispersal of herbicides, minimizes amounts used, and automatically calculates rates of application.
- Road maintenance personnel developed and proposed new BMPs for next NPDES permit year.
- Transportation Division personnel, as well as Inmate Work Crews, documented specific observations relating to potential pollutants in the MS4 during routine inspection and cleaning operations. The observations were followed up by supervisors for resolution.
- County Road District supervisor continued to adjust ditch maintenance schedule to late summer to prevent sediment from reaching stream.
- Continued implementation of Operation and Maintenance Program for public stormwater facilities with goal of reducing pollutant discharges.
- Distributed Multnomah County Stormwater Maintenance Manual documenting procedures for management of the MS4 to appropriate new

County personnel.

- Increased sump inspection and maintenance activity. Tested road waste materials to ensure proper disposal.

- Utilized daily and weekly recordkeeping procedures for Road Maintenance District Supervisors and field staff.

- Reported specific activities in field logs, e.g. street sweeping log, catchbasin cleaning record, mowing, ditching, culvert inspection, and recorded information in computer database.

- Utilized an automated database for compiling field log information, to assist with annual reporting process.

Best Management Practices (BMPs) and Other Activities (OAs): Accomplishments

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 Environmental Services. In general, all BMP tasks are on schedule without modification. Modifications occurring due to annexations and/or road transfers are noted and explained.
The matrices provide the following information:

- √ A short description of the Best Management Practice, with BMP Number. For more detail, see BMP Fact Sheets submitted to DEQ with the Part 2 Permit Co-Application.
- √ 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 5.
- √ Assessment of Controls. Indirect Measures of Effectiveness are available as a means of determining success of Best Management Practice. Direct measures of control will be Pollutant Load Reductions - a long term measurement not usually available the first few years of implementation.
- √ Any proposed modifications or changes to the schedule or activities.

Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 5 - July 1, 1999 through June 30, 2000

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
Public Education and Involvement (PI & ED)					
PI1. Develop a comprehensive stormwater/watershed public participation program potentially consisting of: • A program promoting continued involvement in "keep watershed clean" campaigns and "adopt-a-creek" efforts. • A program to coordinate and improve efforts to label storm drain inlets. • Continuation of education regarding impacts of oil, antifreeze, pesticides, herbicides, paints, solvents, and other wastes which are dumped into the storm sewer system.	Participate with the City and other agencies in coordinating new and existing efforts to involve the public in addressing the stormwater pollution prevention problem. Inform residents in unincorporated County area of potential impacts to the storm sewer system of their everyday activities. Participate to maximum extent practicable in local Watershed Councils and their activities.	Education	• County representative attended new regional public awareness committee: FISHCOM. • Implemented "Adopt a Road" program for litter control and public involvement. • County representative participates monthly in Regional Coalition for Clean Rivers and Streams in developing comprehensive stormwater/watershed public involvement campaign. • Articles published in M.C.TRANS Newsletter (distributed to employees and the public) to promote greater public involvement in various stormwater pollution prevention efforts. • Regularly attended the Johnson Creek Watershed Council meetings to represent County interests. • Actively participated in Tualatin Basin Public Awareness Committee (TBPAC). • Signed intergovernmental agreement for financial support to Regional Coalition for Clean Rivers and Streams. • Attended monthly meetings of Columbia Slough Watershed Council and actively participated in Council Committees. • Contributed $2,000 to Regional Coalition for Clean Rivers and Streams for PY5. • Updated Capital Improvement Program (CIP) criteria through public informational meetings. Included water quality considerations.	• Tracked participation (#/type meetings attended) regarding public involvement.	Due to extensive annexation of some County lands and its residents by the City of Portland in December 1994, the County no longer has jurisdiction over those SE property owners. The County's NPDES roles and responsibilities within the permit area are only for unincorporated areas. For this reason, the County focuses its efforts on County employees and residents in unincorporated areas. In 1998, the County signed an IGA with the City of Portland to financially support the region's comprehensive public involvement campaign: The Regional Coalition for Clean Rivers and Streams. ***See Portland section of Annual Report.***

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 5 - July 1, 1999 through June 30, 2000

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
ED1. Develop comprehensive stormwater/watershed education program potentially consisting of: • A program to educate engineers and others of new structural techniques that reduce negative water quality impacts to streams and the storm system, and design practices which reduce the need for pesticides, herbicides and fertilizer. • A program to educate regarding the relationship between vehicle use and stormwater quality problems. • A program to educate the public regarding the need to clean up and properly dispose of pet wastes. • Continuation of education programs regarding the impacts of oil, antifreeze, pesticides, herbicides, paints, solvents, and other wastes being dumped into the storm sewer.	Participate with the City and other agencies in coordinating new and existing efforts to educate and inform the public about impacts to the stormwater system. Educate appropriate County personnel regarding impacts of their on-the-job activities on the MS4, with the goal of minimizing negative impacts to receiving streams.	Education Road Maintenance	• The Land Use Planning Division initiated an educational/outreach program, including brochures and presentations on proper erosion and sediment control. • Presented status of Road Waste Management Program to Oregon Association of County Engineers and Surveyors. • Published articles in "M.C.TRANS" newsletter, (sent to 45,000 households), to educate public and employees about litter and stormwater pollution impacts. • Worked with public to review and develop Transportation System Plans including natural resource considerations. • Updated County's herbicide applicators for current certification procedures to minimize water quality impacts to MS4. • Clean Water brochure series offered to public at both Permits office and at Survey office. • Work session held to review the goals and accomplishments of PY5 Stormwater Program attended by Road Maintenance Managers & Supervisors, Transportation Division personnel.	• Tracked phone calls resulting from M.C.TRANS article. • Training sessions were tracked for attendance.	Due to extensive annexation of some County lands and its residents by the City of Portland in December 1994, the County no longer has jurisdiction over those SE property owners. The County's NPDES roles and responsibilities within the permit area are only for unincorporated areas. For this reason, the County focuses its efforts on County employees, and residents in unincorporated areas. The County, as co-permittee, will track Portland's progress and stay involved in joint training sessions for staff as appropriate.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
Operations and Maintenance (OM)					
OM1. Develop O&M plans (or review and revise as appropriate, existing O&M plans) for all public storm facilities (new and existing) with the goal of reducing pollutant discharges.	Determine if current practices are effective in ensuring that sumps and inlets are operated and maintained in a manner that reduces pollutants to the maximum extent practicable (MEP). If not, make improvements. Develop new O&M procedures for facilities not currently addressed.	Road Maintenance Compliance	• Began major sump inventory in January 2000 to be placed on map for DEQ Permit. • Reviewed timing of ditch maintenance procedures and altered schedule to lessen disturbance (to promote stabilization). • Continued to participate in ODOT Technical Advisory Committee to review and improve road waste management. • Developed proposed changes to BMPs for second permit term. • Removed collected catchbasin materials (85 tons) to proper disposal site for incineration. • Generated summary reports from computer database utilizing daily/weekly inspection forms from field personnel. • Worked with ODOT to investigate best methods of collection and disposal of road waste. Continued research process to determine feasibility of building new waste containment and dewatering facility. • Distributed the "Multnomah County Stormwater Maintenance Manual" which describes procedures and inspections re: operating and maintaining County roads and associated drainage facilities. The procedures help to reduce water quality impacts/pollution problems. • Continued to improve NPDES field logs and used them to track maintenance activities. • Utilized the maintenance manual and recordkeeping system to conduct inspections of the system and correct problems as needed. • Dedicated a staff person to track/compile records. • New road index system was utilized for all County roads to provide more accurate reporting by inspectors and road maintenance staff.	• Compiled records and calculated total amount of debris collected, problems addressed, etc. • Reviewed reports to determine effectiveness of recordkeeping system. • County Road Maintenance Supervisors and field staff are surveyed to determine if O&M practices are effective. • Detailed BMP files demonstrate OM1 compliance.	Due to annexations of County lands on the east side (i.e. sumped areas) by the City of Portland in December 1994, the County is now only responsible for maintaining stormwater facilities associated with County-owned roadways in small pockets of the west side. The county currently has a contract with the City of Portland for the City to maintain stormwater facilities associated with County roads within the permit area.
OM2. Evaluate operations and maintenance activities for public rights-of-way to determine water quality impacts. Recommend improved procedures or practices that reduce the discharge of	Determine if current maintenance practices for roads/ditches are effective at reducing stormwater pollution; if not, make the necessary	Road Maintenance Compliance Permits	• Increased frequency of street sweeping activity to 10-12 times per year. • Use environmentally-friendly asphalt release agents to eliminate use of oil in road rehabilitation projects. • Evaluated O&M activities regarding emergency response (Incident Command System). Program includes	• Compiled records and calculated total amount of debris collected, problems addressed, miles	On schedule. No modifications. Westside Maintenance Agreement with City of

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
pollutants to the stormwater system.	improvements. Ensure all appropriate County personnel continue BMP activity through regular workshops and training sessions. Promote requirements in road contracts to demonstrate compliance with erosion control plans.		protection of storm basins, containment of runoff materials, and near-stream prevention methods. • Recommended and instituted new written procedures for routine inspection and maintenance of inlets, outlets, and sumps with the goal of protecting water quality. • Continued changes and monitoring of maintenance task schedules and practices to lessen impact of these tasks during high runoff periods. • Updated implementation plans for PY5 activity. • Made changes to significantly reduce use of sand by changing crack-sealing material. • Proper silt/sediment control methods were used for culvert replacement projects (outside permit area). • Reduced tracking of soils onto roadway during road construction projects by requiring approach roads to be rocked and paved. • Inspection staff coordinated with Road Maintenance staff for complete system inspection of streets and ditches. • Continued use of bio-bag filters at catchbasins and ensured proper continuous use. Incorporated these methods into permit conditions and inspected for compliance. • County representative attended PDOT meetings regarding operations and maintenance practices - Technical Advisory Committee. • Continued to pick up and recycle sanding gravels in curbed areas of the County. Used environmentally safe CMA to prevent roadway icing whenever possible. • Continued to practice safe and environmentally sound vegetation management practices to the maximum extent practicable. Developed permit requirements to include vegetation management. • Held meetings to review & discuss road waste management & impacts to water quality. Improved procedures were recommended. • Implemented pollutant reduction program and standards for disposal of sump and catchbasin material.	swept, etc. • Reviewed summary reports to determine extent of controls.	Portland (PDOT) and Multnomah County (DES) provides for road maintenance in unincorporated areas (primarily "Dunthorpe") to be conducted by PDOT at the same level of service as PDOT provides to City roadways.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
OM3. Review current certification procedures/requirements for high-volume users of pesticides, herbicides, fertilizers (e.g., commercial applicators, public agency personnel) to assure that water quality impacts are addressed. As appropriate, make recommendations for changing the requirements.	Determine if current training/certification practices address water quality issues. If not, recommend changes. Improve application practices and train personnel to reduce pollutants to the maximum extent practicable.	Road Maintenance Education	• County applicators passed Dept. of Agriculture Applicator Testing, for laws and safety, and right-of-way, and received annual license renewals. • Vegetative management specialist addressed herbicide, pesticide application, with water quality impacts as a top priority. • Vegetation manager attended conference about biological invaders to learn about impacts of invasive species. • Tested use of pine resin for sticker-spreader in lieu of chemicals. • Used herbicide spray truck which meters application rates, calculates rates per mile, mixtures and concentration rates to reduce amount of spray and reduce impact to environment. • Attended annual Oregon Vegetation Management Association Conference for R-O-W herbicide applicators (October 99). Included sessions about aquatic herbicides and pesticide usage, recycling pesticide containers, and herbicide movement on rights-of-way. • Received annual education and renewal certification from ODA for licensed applicators. • Utilized field logs to record use of herbicides, pesticides, by amount of area covered, with result of reducing amounts used. • Distributed informational brochure for landowners managing "no-spray zones." • Distributed public education brochure regarding eliminating noxious weeds through competitive plantings (less use of herbicides).	• Kept records of number of applicators attending the annual certification training. • Used results of several trial tests with various chemicals (i.e., "Pro-roundup," "Transline," "Finale," and "Pendulum") to determine which products tend to have less health and environmental effects (e.g. no/fewer residuals). • "Herbicide spray" logs were completed by field staff and filed. Information includes location sprayed, product type used and rates applied.	On schedule. No modifications.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
OM4. Review existing truck hauling practices and make recommendations, if necessary, to limit occurrence of leaks, spills, or other releases.	Control discharges from truck hauling activities to the extent that they are impacting County ROW. Respond to spills according to established emergency procedures. Follow-up with enforcement action and accountability.	Emergency Response Permits Compliance Road Maintenance Education	• Trained Road Maintenance staff in use of asphalt release products as a replacement for diesel (for release of truck material). • Erosion control inspection requirements included conditions for spillage, haul routes, and mud tracking. • Continued compliance monitoring by coordinating enforcement with Multnomah County Sheriff's office. • Utilized established requirements for wash racks, grating, gravel/paved roads, bio-bags and a silt-sock device for catchbasins. Incorporated into permit requirements on a case-by-case review. • Installed, monitored, and maintained straw bales for extra filtering and erosion prevention. • County field inspectors continued to monitor grading and erosion control permit activities. • Continued to inspect County fleet trucks daily to determine if defects/leaks require repairs. • Responded to 911 referrals and complaints to monitor and clean up spills on County roads.	• Utilized the "Report of Event" form for recording County's efforts to respond to and clean up any spills on County roadways. • Recorded inspection and monitoring results.	On schedule. No modifications.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 5 - July 1, 1999 through June 30, 2000

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
Industrial/Commercial Controls (IND)					
IND1. Develop a comprehensive program to control the discharge of pollutants to the stormwater system from existing and developing industries and municipal solid waste facilities, including procedures to develop and enforce requirements, conduct inspections and implement a monitoring program. (City of Portland Lead)	Support efforts by the City of Portland to eliminate illicit discharges from industries to the MS4 and to educate facility operators about ways to prevent stormwater pollution. Coordinate with DEQ's general permitting program.	Education Land Use Planning Road Maintenance Compliance	• Due to annexations by the City of Portland of County lands in 1995, the County has no jurisdiction over industrial property owners/operators in the Portland NPDES permit area.	***See City of Portland Annual Report.***	IGA was signed, but this BMP section will not be required due to City annexations/lack of County jurisdiction over industrial dischargers.
Illicit Discharge Controls (ILL)					
ILL1. Manage the Spill Prevention and Response program that reduces the frequency and impact of spills to the stormwater system.	Improve coordination efforts by all co-permittees to reduce the impacts of spills on surface and groundwater. Incorporate existing groundwater protection into stormwater program for spill prevention and response.	Emergency Response	• Continued to work with regional HAZMAT teams on policy matters concerning water quality impacts. • Continued full time Emergency Management Administrator position. • Used mini-booms and absorbent materials for quick response to minor spills of oil or fluid. • County inspection officers enforced action against several cases of mud tracking onto right-of-way. • Continued training of road maintenance staff and administrative staff in procedures regarding spills and discharges requiring emergency response. • Kept resource phone list for HAZMAT team.	• Kept records and notes of committee meetings. • Used NPDES "Event Form" to record response to spills.	On schedule. No modifications. The City is the lead co-permittee on this BMP. The County is a participant in the regional Interagency Committee on Spill Control.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
ILL2. Develop and implement a program to prevent, search for, detect, and control illicit connections and discharges to the stormwater system.	Detect and eliminate all illicit discharges (illicit connections and illegal dumping) to the MS4.	Emergency Response Permits Road Maintenance Compliance	• Distributed flyer "Questions to ask before dumping material" includes: "Is there a stream on site? Is there standing water, is it in the Tualatin or Balch Creek basin? Steep slopes, etc. If so, activity will have to be permitted. • Road Maintenance crews continued to refer reported/suspected problem septic systems to appropriate agency. • County inspectors and permit chief worked closely with maintenance supervisors, transportation safety officer, and County drainage engineer to detect and eliminate illicit discharges. • Corrections officer and inmate work crews continued to respond to litter/dumping complaints (funding provided by County). • Road Maintenance crews continued to refer illegal dumping incidents to vector patrol and "garbage police." • Worked with County Nuisance Control Division for enforcement and follow-up to potential illicit connections. • County environmental contractor picked up and properly disposed of containers (7 incidents) to prevent discharges to the stormwater system. • Illicit discharge discovered; stop work order was issued; property owner required to remove fill. • Recycled used pesticide containers at recycle center for that purpose to assure pesticides and plastics are kept out of landfill. • Inspectors continued to aggressively monitor development and other roadway activity to correct and ensure erosion control measures were being conducted.	• Compiled information from road maintenance field logs and "Inmate work crew" logs to track and respond to pollution problems. • Emergency Response personnel recorded action on "Event Forms."	Due to annexations by the City of Portland of County lands in December 1994, the County no longer owns any major stormwater outfalls in the permit area. For this BMP, the County is focusing its efforts at controlling illegal dumping. IGA has been signed with City of Portland, but this BMP section may no longer be required due to annexation.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 5 - July 1, 1999 through June 30, 2000

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
New Development Standards (ND)					
ND1. Require Operation and Maintenance Plans for stormwater facilities related to new private development.	Address post-development pollutants discharged from private sites.	Permits Land Use Planning Compliance	• Multnomah County continued negotiations with City of Portland for agreement where Portland would implement 2040 plan in westside urban areas. The following BMP accomplishments apply throughout the unincorporated County, and are not necessarily within the Portland NPDES permit area. • Engineering staff in the Transportation Division continued to support the planning staff by reviewing technical data submitted by permit applicants for stormwater facilities. • Increased maintenance bonds from one year to two years for maintenance of swales and other bio-filtration mitigation measures for stormwater that potentially impacts or is directly discharged in the right-of-way. • Continued required use of erosion control devices, plans and demonstration of effectiveness. • Engineering staff are checking design for compliance with stormwater quality controls, including erosion control standards, connection to right-of-way, onsite detention, minimization of peak rate runoff, etc. • Stormwater engineering staff reviewed new development applications for compliance to Multnomah County standards for surface water management. • Continued to require detention systems for proper connection to right-of-way. • Reviewed new development permit applications for sedimentation manholes.	• Tracked level of effort expended in meetings related to this BMP. • Compiled information on "Report of Event" form re: review of permit applications.	Due to annexations by City of Portland of County lands in 1995, the County now has only small pockets of private property within the Portland NPDES permit area. On schedule. For Multnomah County's portion of the permit area, the County issues land use and right-of-way permits, and the City of Portland issues building, plumbing, and electrical permits.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
ND2. Work with landowners, tenants, and/or public agencies to apply practical erosion control, sediment control, and other controls to reduce pollutant discharges associated with undeveloped and developed properties, and park lands.	Assist property owners to eliminate erosion and sedimentation problems on their properties.	Permits Construction Education Land Use Planning	• The Land Use Planning Division organized a Task Force in 2000 to reevaluate the County's Grading and Erosion Control (GEC) standards and procedures. The results are expected to lead to more effective implementation and enforcement. • Right-of-way inspectors monitor land use activities adjacent to county R-O-W to ensure practical erosion control methods are used. Inspection determines if there is sediment or other pollutants discharged into the public R-O-W. • Transportation section personnel continued to report apparent violations caused by fill or excavation activities to Planning Section when outside R-O-W. (When inside R-O-W transportation group does follow-up.) • County Planning issued citations for grading violations. Each required site inspection, notification, and follow-up resulting in appropriate GEC permit or other action. • County is distributing educational brochures to landowners re: practical erosion control. • County Planning requires 300 foot setback in West Hills Rural Area Plan for designated significant streams.	• Kept records of the County staff's involvement in local educational workshops/ seminars. • See other BMP (ND1, ND4) accomplishments herein for extensive County erosion control program. • Kept records of County code violations, inspections, and status.	On schedule. No modifications. This BMP relates to private landowners. In the Portland permit area, County involvement is very limited because of the annexation of lands to the City, and the transfer of park lands to METRO.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
ND4. Develop a comprehensive pollutant discharge control program for all construction sites.	Eliminate/reduce discharge of all pollutants from construction sites which adversely impact stormwater and receiving water quality.	Land Use Planning Construction	• Hillside Development (HD) or GEC permits are required for grading, clearing, or fill on sites within the permit area. • Project managers and inspectors implemented proper erosion control methods on construction sites, and road construction projects. • County enforced code requirements for maintaining grading and erosion control. • Multnomah County Planning Division applied the Grading and Erosion Control Standards (GEC) for "land-disturbing" activities on private lands. • Used and required silt socks to reduce sediment in runoff. • Continued to implement stringent erosion control measures for road construction projects utilizing ODOT's 00280 contract specifications. These measures require a formal pollution prevention plan, a rain gauge on-site, weekly site monitoring or more frequent inspection in the event of a 1/2-inch 24-hour storm event. • Required cash deposits as well as performance bonds for development permits (right-of-way permit) to ensure compliance with erosion control requirements. • County Road Maintenance often used bio-bag filters as temporary sedimentation control during storm events.	• HD and GEC permits standards require temporary erosion control and water quality protection during construction as well as permanent erosion control and stormwater facilities for final approval. Inspectors are trained to constantly evaluate and assess these controls. • Tracked number and status of permits issued.	On schedule. Task of participation in City's efforts has been modified to coordinate with City of Portland's new development standards team; schedule revised by City of Portland. County Planning will continue to coordinate with Portland City Building Bureau, and enforce construction site standards.
ND6. Establish incentives and/or requirements for contractors/developers to ensure that damages from erosion and/or sediment deposition are addressed and paid for.	Continue to require those responsible for damage and water quality pollution to pay clean-up costs.	Compliance Permits Construction	• Implemented 300 foot setback in West Hills Rural Area Plan for designated significant streams as part of County's SEC zoning program. • Continued to require refundable cash deposit to ensure County roads remain clear of material which could be tracked onto road from adjacent development activity. • Payments for Erosion Control measures are now itemized in project contracts instead of lump sum bids to encourage /ensure installation and use. • Final inspections were conducted to ensure compliance before release of performance bonds. • Required graveled entrances/exits to construction area used by trucks to reduce tracking of debris. • Continued to require performance-payment bonds for post-construction. The bonds were increased from one year to two years following completion of construction. • Required cash deposits to ensure compliance with erosion control requirements in many cases.	• Kept records of erosion control, bonds, and meetings attended. • Contractors were generally in compliance with requirements during PY3.	On schedule. No modifications.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 5 - July 1, 1999 through June 30, 2000

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
Structural Controls (STR)					
STR1. Evaluate need for construction of additional stormwater quality treatment facilities. If appropriate, develop plans for construction, maintenance and monitoring of the facilities. Construct and monitor appropriate facilities.	Consider water quality impacts of ongoing or planned treatment facility construction projects. Identify need for and feasibility of new projects where appropriate.	Compliance Design Construction	• Continued coordination in Johnson Creek Watershed Council meetings for inter-agency BMPs, capital projects, and watershed-wide design standards.	• Recorded level of effort expended on review of plans, design of water quality facilities, and attendance at committee meetings.	On schedule. No modifications.
STR2. Determine the practicability of retrofitting existing drainage and flood control facilities (e.g., retention basins, drainage channels) to improve water quality. If practicable, develop plan(s) and implement.	Continue sump replacement program, which was designed to improve pollutant reduction aspects of existing drainage and flood control facilities.	Design Transportation Planning Construction	• Retrofits are done as part of upgrades to County-owned roadways and associated drainages. • Continued to require any developers to install pollution plates on new inlets.	• Recorded level of effort expanded on design of retrofits, amount of mitigation projects, repair work done.	Due to annexations of County lands (and associated ~900 sumps) by City of Portland in 1995, there are very few County-owned sumps remaining in the Portland NPDES permit area. For this BMP, the County will focus its efforts on retrofits associated with County right-of-way projects. Existing agreement with City of Portland for City to maintain County-owned roadways on west side, includes sumps in the Portland NPDES permit area.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 5 - July 1, 1999 through June 30, 2000

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
STR3. Support government and community tree planting programs.	Encourage tree planting and use of other vegetation to increase adsorption and infiltration, thereby reducing stormwater runoff pollution. Require appropriate landscaping on County right-of-way projects associated with new or improved roadways.	Design Land Use Planning	• Continued support for Skyline Neighborhood Association tree planting program. • Specifications for landscaping in right-of-way requires use of low impact species such as native plants. • Land Use Planning requires landscape materials on at least 15 percent of entire site, retention of existing trees, for approval of community service (schools) or conditional use developments. • Provided educational information re: native species workshops presented by the East Multnomah County Soil and Water Conservation District (SWCD).	• Tracked meetings, development review, including landscaping.	Due to annexations of County land by City of Portland in 1995, the County now only has small pockets of private property within the Portland NPDES permit area. For this BMP, the County will focus its efforts on landscaping in County rights-of-way. Annexation of the large SE Portland area (previously unincorporated County) to the City modified the County's contribution to the City for this BMP. The County has an agreement with the City of Portland to conduct building permit review (includes review of landscaping plans) for private property in the County's portion of the Portland NPDES permit area.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
STR4. Review and modify existing design standards for drainage/flood control and water quality facilities to improve water quality.	Enforce surface water quality requirements (established/being established by others) for unincorporated areas within the Portland NPDES permit area.	Compliance Design Land Use Planning	• Reviewed and modified design standards to incorporate water quality considerations. Drafted new drainage section for consideration for Multnomah County Code Street Standards, including sections on hydrology, hydraulics, runoff calculations, drainage facility design, fish passage design, and water quality. • Reviewed draft water quality criteria issued by the City of Portland. • Used Portland's existing Water Quality Facilities Design Manual for guidance. • Included sedimentation manholes and pollution plate assemblies in design of major roadway.	• Kept track of staff's participation in local activities related to this BMP.	Due to annexations of County lands by the City of Portland in December 1994, the County now only has small pockets of private property within the Portland NPDES permit area. For this BMP, the County will focus its efforts on development in public right-of-ways. The County has an agreement with the City of Portland to conduct building permit review (including review for compliance with water quality design criteria) for private property in the County's portion of the NPDES permit area.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 5 - July 1, 1999 through June 30, 2000

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
Planning/System Preservation and Development (PS)					
PS1. Modify landscape requirements for various land use district plans to encourage use of self-sustaining vegetation which reduces the need for pesticides, herbicides, fertilizers and water.	Reduce pesticide/herbicide use and encourage use of self-sustaining vegetation as means of improving water quality.	Design Land Use Planning	• Specifications for landscape in right-of-way require use of low impact species. • Implemented 300 foot setback requirement in West Hills Rural Area Plan. This applies to designated significant streams as part of SEC zoning program. • Planning Division managers are working with City of Portland to implement 2040 plan including incentives to use self-sustaining vegetation. • Information from City of Portland is available at the County Permits office: - Portland Native Plant list - "Alternatives to Pesticides" brochures - "Naturescaping for Clean Rivers" workbook • Permit approval for use of Significant Environmental Concern (SEC) zones required natural vegetative fringe along rivers, streams, and wetlands.	• Kept records of approved plans in SEC zones.	Due to annexations of County land by the City of Portland in December 1994, the County now only has small pockets of private property within the Portland NPDES permit area. For this BMP, County will focus its efforts on landscaping in County right-of-ways.
PS2. Evaluate practicability of providing financial incentives to property owners who protect natural areas considered to have valuable water quality characteristics.	Increase amount of natural areas in the urbanized parts of the County in order to reduce stormwater runoff and the pollutants carried with it.	Permits Land Use Planning	• Continued work with City of Portland Planning Bureau to coordinate 2040 plan. • County Zoning Code provides an incentive to protect natural areas and water courses through the Planned Development (PD) Section.	• Kept records of approved plans including those involving protection of natural areas.	Due to annexations of County land by the City of Portland in December 1994, the County now only has small pockets of private property within the Portland NPDES permit area. For this BMP, County will focus its efforts on landscaping in County right-of-ways.
PS3. Inventory and map the storm sewer system.	Improve knowledge of the County system, to facilitate identification of problem areas and implementation of control programs in strategic locations.	Design	• Continued to update MS4 map to include new stormwater systems. • Allocated staff resources to ensure continued map updates.	• Tracked hours expended by staff person to update stormwater maps.	On schedule. No modifications.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
Other Activities (OA)					
OA1. Program development and management.	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," given the County's unique conditions.	Compliance	• County Stormwater Implementation Team continued to implement BMPs on schedule. • Organized and presented updates regarding Endangered Species Act/Salmon Recovery program to introduce key concepts to the Stormwater Management team. • Developed focus groups to further goals of program: –Erosion and Sediment Control –Winter Maintenance Practices –Road Waste Management –Stream Crossing Practices –Vegetation Management –Truck Hauling Practices –Construction Site BMPs • Hired a technical/policy consultant team to help direct and manage the program, including education of County staff and oversight of reporting activities. • Facilitated a series of work sessions with County staff related to program implementation and reporting. • Actively participated in monthly meetings with the co-permittees to oversee program implementation. • Attended public and agency meetings to represent the County's interests.	• Kept track of staff time spent managing the program. • Conducted informal surveys of staff responsible for functional group tasks.	On schedule. No modifications.
OA2. Program assessment and evaluation.	On a continuous basis and especially annually, assess and evaluate the program to ensure the best use of available resources and make recommendations for continuous improvement.	Compliance	• Utilized semi-annual reporting forms for each BMP to continually evaluate progress of stormwater implementation team. • Utilized recordkeeping system for use by the County staff to track work done in the field, meetings attended, etc. • Designated a County staff to compile/summarize the field records so that management could evaluate the results. • Worked with County staff to compile BMP files for evaluation of progress at several work sessions with entire Implementation Team.	• Kept track of staff time spent evaluating and reporting BMP and program implementation tasks.	On schedule. No modifications.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 5	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
OA3. Monitoring Program and Annual Water Quality Report.	Begin to identify: pollutant loads entering receiving waters via stormwater runoff, pollutant sources/problem areas, the most effective BMPs for controlling problem areas/sources, and degree to which stormwater discharges might be impacting water quality and aquatic environment. Add to existing water quality database.	Compliance	• Continued to support the City's ongoing monitoring program through contribution of in-kind services.	This work is being conducted by the City of Portland, as part of the overall program monitoring efforts. ***See City of Portland Annual Report.***	***See City of Portland Annual Report.***
OA4. Estimate seasonal pollutant loadings for major outfalls.	As required by the regulations, estimate seasonal pollutant loadings for each major stormwater outfall.	Compliance	• ***See City of Portland Annual Report.***	Not applicable to County.	Due to annexation of County lands by the City of Portland, the County no longer has ownership of any major stormwater outfalls.

[1]All functional groups are formed in the Multnomah County Department of Environmental Services, Transportation and/or Land Use Planning Divisions and/or the Technical Consultants contracted to manage the NPDES Program.

Section IV

PORT OF PORTLAND

ANNUAL REPORT
PORT OF PORTLAND
MUNICIPAL STORM WATER PERMIT NO. 101314
SUBMITTED AUGUST 19, 2000

INTRODUCTION

This document is submitted to the Oregon Department of Environmental Quality ("DEQ") by the Port of Portland ("Port") to satisfy the reporting requirements of National Pollutant Discharge Elimination System ("NPDES") Municipal Separate Storm Sewer System ("MS4") Discharge Permit No. 101314 ("Municipal Permit"). As one of the three co-permittees authorized to operate a section of the Portland MS4 under this permit, the Port is required to submit annual reports to DEQ for each fiscal year (July 1 to June 30) of the 5-year permit term. According to Schedule B, Sections 6 and 7 of the Municipal Permit, these reports are to include a summary of the stormwater monitoring data collected during that year, a description of the activities undertaken to implement the Municipal Storm Water Management Plan ("MSWMP"), a description of any changes made to the MSWMP, and a description of any water quality improvement or degradation identified during the permit year.

This report documents the stormwater monitoring efforts, the activities undertaken to implement the Port's MSWMP and related Best Management Practices ("BMPs"), and other stormwater-related activities that occurred on Port-owned properties during the 1999-2000 permit year ("permit year"). All tables and figures referenced throughout this section of the report are compiled in the attached Appendices A and B, respectively, unless otherwise stated.

Port of Portland Properties

The Port owns approximately 8,200 acres in three operating areas and one non-operating area within the City of Portland Urban Services Boundary. Operating areas include the Portland International Airport ("PDX"), the Portland Ship Repair Yard ("PSY"), and the five Marine Terminals. The non-operating area consists of several industrial parks occupied by various commercial tenants. Each of these properties is briefly described below.

Portland International Airport

PDX is approximately 3,229 acres in size and is located in Northeast Portland between the Columbia River and the Columbia Slough. The facility is owned and operated by the Port and includes numerous aviation-related tenants. Stormwater runoff from the PDX property discharges into the Columbia Slough through a series of nine outfalls, which are authorized under the new NPDES General Industrial Storm Water Discharge Permit 1200-COLS. This permit was issued by DEQ in order to incorporate the Total Maximum Daily Load ("TMDL") for the Columbia Slough, which was approved in December 1998. PDX was formerly covered under a 1200-T Permit for transportation activities during the previous permit year, but changed to the 1200-COLS Permit in February 2000. With the exception of the Oregon Air National Guard, all PDX tenants requiring stormwater permits are co-permittees under the Port's 1200-COLS Permit (Table 1). PDX also holds an NPDES Construction Dewatering Permit and

an NPDES Anti-icing/De-icing Waste Discharge Permit, both of which were issued by DEQ. Several PDX tenants are also co-permittees under the Anti-icing/De-icing Permit.

Ship Repair Yard

PSY is a 94-acre facility located on Swan Island along the right bank of the Willamette River in North Portland. Throughout the permit year, PSY was leased to and operated by, Cascade General, Inc., who also sublets portions of the site to other tenants. Stormwater runoff on the facility drains into the Swan Island Lagoon and Willamette River and is authorized under a 1200-Z NPDES Permit. Cascade General holds the permit for this facility and is responsible for daily environmental compliance and annual reporting to DEQ. Subtenants are co-permittees on this permit and are required to follow Cascade General's SWPCP and related BMPs. These sub-tenants are shown in Table 1. Near the end of the permit year, the Port was in the process of selling PSY. As such, it will not likely be included in future Municipal Permit Annual Reports.

Marine Terminals

The five Marine Terminals owned by the Port occupy approximately 1,023 acres and are located along both the Willamette and Columbia Rivers. These areas are managed by the Port's Marine Department ("Marine") and include Terminals 1 and 2 ("T-1" and "T-2") on the left bank of the Willamette River, Terminals 4 and 5 ("T-4" and "T-5") on the right bank of the Willamette River, and Terminal 6 ("T-6") on the left bank of the Columbia River. Stormwater runoff from these facilities drains into both the Willamette and Columbia Rivers and the Columbia Slough. The Port operates T-6 and holds a 1200-Z NPDES Permit for this facility. The majority of the other terminals are leased to various tenants, many of which have their own NPDES permits (Table 1).

Industrial Parks

The industrial parks managed by the Port include Swan Island, Port Center, Mocks Landing, Rivergate, Portland International Center ("PIC"), Troutdale Industrial Park, and Brookwood Corporate Park. The Troutdale (75 acres) and Brookwood (22 acres) properties are located outside of the Municipal Permit area and are not discussed further in this report. The remaining areas occupy approximately 3,838 acres. Swan Island, Port Center, and Mocks Landing are all located along the right bank of the Willamette River near PSY. Rivergate is located between T-5 and T-6, and PIC is located just east of PDX. The Port has sold much of the property within these parks and the remaining areas are approximately 80% leased. The Port Properties Department ("Properties") manages the leased parcels. Stormwater runoff from these facilities discharges to the Willamette River, the Swan Island Lagoon, and the Columbia Slough. Industrial Park tenants that discharge stormwater into the Port's portion of the MS4 are responsible for obtaining and complying with all applicable permits independent of the Port (Table 1).

Organizational Structure

Each of the operating areas mentioned above is responsible for daily compliance with a variety of environmental permits, including their individual NPDES Storm Water Permits. Operating areas with NPDES Industrial Storm Water Discharge Permits are also required to prepare and maintain SWPCPs for their facilities to provide guidance and procedures for controlling pollutant

exposure to stormwater. Port-wide environmental issues are managed by the Environmental Services Division ("ESD"), a corporate branch in the Port's Policy and Planning Department. The ESD manages the Port's Municipal Permit, maintains the MSWMP, and provides the operating areas with policy guidance and training on municipal stormwater issues. An organizational chart of the Port's environmental services is provided in Figure 1. One of the many activities that ESD was involved in during the permit year, was the preparation of the Port's section of the Municipal Permit Renewal Application.

STORMWATER MONITORING DATA

The completed Port Municipal Storm Water Monitoring Program was submitted to DEQ on April 8, 1998. Under this program, the monitoring components to be performed on Port property include Industrial Permit stormwater sampling, dry season monitoring, de-icing monitoring, tenant monitoring, and BMP effectiveness monitoring. Since the land use characterization monitoring required by the Municipal Permit is already being performed by the City of Portland ("City") for all areas within the Urban Services Boundary, Port collection of such data was determined to be a duplication of effort. Therefore, the DEQ has agreed that the Port is not required to conduct independent municipal land use stormwater monitoring provided it either financially support the City's monitoring effort or redirect its resources to another part of the program. The Port officially implemented both of these conditions during the permit year. In an agreement with the City that was signed on August 5, 1999, the Port agreed to pay its percentage of the annual monitoring costs until 2005.

Monitoring results for the permit year included Industrial Permit compliance monitoring, dry season inspection monitoring, and BMP effectiveness monitoring. These results are briefly described below and are discussed in more detail in the M1 – Water Quality Monitoring BMP section of this report.

Industrial Permit Monitoring

Monitoring data collected during the permit year from industrial stormwater outfalls at PDX, PSY, and T-6 are included in Tables 2a through 4. These samples are representative of the variety of activities, including transportation, industrial, and commercial uses, that occur on Port property. Although this data set was collected as part of the Port's Industrial Storm Water Permit compliance, it is included in this annual report because it effectively represents a portion of the Municipal Permit stormwater monitoring requirements. It should be noted that the monitoring parameters for PDX changed between the two sampling periods during the permit year and that additional sampling sites were added due to the change from the 1200-T Permit to the 1200-COLS Permit. The grab sample analysis from the industrial sampling at PDX, PSY, and T-6 was also used to estimate the pollutant loads for each storm event sampled and each sampling location (Tables 5 through 7).

Dry Season Inspection Monitoring

The Port's dry season monitoring effort is part of the Illicit Discharge Detection and Removal Program ("IDDRP") and is designed to detect non-stormwater discharges from Port outfalls. Dry season monitoring of all Port-owned outfalls occurs on a 5-year rotating schedule with certain

priority outfalls monitored every year. The current schedule is shown in Table 8. If a discharge is observed from an outfall, a sample is collected and sent to an independent laboratory for analysis. The results of this analysis and the conditions observed in the field are then used to help identify the source of the discharge and to determine whether potential pollutants are entering the stormwater system. Follow-up investigations and inspections are scheduled when necessary. Dry season monitoring and sampling data collected during the permit year are presented in Tables 9 and 10, respectively.

BMP Effectiveness Monitoring

The Port's BMP effectiveness monitoring program was originally designed to monitor and evaluate the effectiveness of three structural BMPs located at various Port facilities. These structural BMPs include: 1) a Stormceptor® water quality manhole located at the PIC industrial park, 2) a series of StormGuard® catch basin filters located at PDX, and 3) an oil/water separator located at T-6. During the permit year, BMP effectiveness monitoring was expanded to include a stormwater swale located near Ramsey Lake in the Rivergate industrial park. The data collected during the permit year are included in Tables 11 through 24. A discussion of this data and an analysis of the effectiveness of the individual structural BMPs is presented under the M1 – Water Quality Monitoring BMP section of this report.

MSWMP ACCOMPLISHMENTS FOR THE 1999-2000 PERMIT YEAR

The Port MSWMP was submitted in Part 2 of the NPDES Municipal Permit application and was approved by the DEQ. In addition to documenting Port-wide policies and procedures on stormwater management, this plan also describes a series of sixteen BMPs in eleven different categories, including Planning and Policy Development, Public Involvement, Education, and Operations and Maintenance, among others, to be implemented throughout the 5-year Municipal Permit term. The BMPs included in the MSWMP were selected to satisfy the requirements for municipal compliance promulgated in 40 CFR 122.26(d)(2)(iv). Under each of these BMPs, the Port developed several tasks, or implementation activities, designed to help put that BMP into practice. General methods for program evaluation were also developed.

The remainder of this report describes the BMPs in the Port's MSWMP and briefly summarizes the Port's activities within these BMP categories during the permit year. For the purposes of this annual report, only the BMP description, status, implementation activities, and proposed BMP changes will be discussed.

PP1 - Planning and Policy Development

BMP Description:

Promulgate policy and practices to address stormwater pollution issues on Port property.

Status

The ESD continues to provide policy and program direction to the Port operating areas. A new water resources policy and supporting procedures, which include stormwater components, is currently being developed. Many Port-wide stormwater programs have already been implemented for the purposes of stormwater control and runoff water quality improvement. The

ESD's role is to develop the required programs in cooperation with operating area staff, gain approval from operating area management, and then help implement programs in the respective areas. Ultimately the operating area environmental staff conducts and maintains the program components.

The programs that have been implemented and are a part of operating area compliance include the IDDRP, the MSWMP, and the Tenant Program. Port-wide catch basin stenciling and catch basin inspection programs are also in place.

The Port continues to comply with the stormwater and wash water discharge permit for de-icing and anti-icing materials, which ensures compliance with the Columbia Slough TMDL waste load allocations for biochemical oxygen demand ("BOD"). The PDX Environmental BMP Committee meets monthly to address stormwater BMPs, including de-icing practices. PDX is also now complying with DEQ's new 1200-COLS Permit for the Columbia Slough watershed.

Operating area site specific practices are being improved and developed as operating area stormwater awareness increases. The Port is dedicated to continued stormwater education efforts. The site-specific pollution control practices developed are documented in the operating area SWPCPs. The benefits from these implemented practices are monitored via the wet season visual water quality observations and sampling and dry season screening and sampling.

Implemented Activities

Task 1 – Develop and implement a process for promulgating policies and practices regarding all aspects of stormwater pollution control.

Development of pollution control practices during the permit year was typically concurrent with the implementation of the various stormwater-related programs. As guidelines were developed, they were documented as part of the implementation process. In some cases, documentation included correspondence to a Port tenant and incorporation of a practice into Port-wide environmental procedures for stormwater. In all cases, the documentation of the developed practice is maintained in the Port MSWMP, the operating area SWPCP or other appropriate stormwater documents.

The ESD continued to make progress in developing practices concerning property inspection documentation, environmental lease language and use agreement updates, and the development of a Port-wide Environmental Management System ("EMS") and Environmental Management Information System ("EMIS"). Other plans addressing such issues as riverbank and wetland management also continued to be developed.

In the past year, the Port defined the key elements for the EMS including several policies, impact/aspect analyses, management plans, and a permit tracking system. With regard to policies, the Port's Commission adopted a revised Environmental Policy to reflect the changing times and the additional requirements or challenges the Port is now faced with. This environmental policy is designed to provide direction for the organization and serves as the cornerstone of the EMS. In order to implement the revised Commission policy, the Port's Executive Director issued the first seven EMS administrative environmental policies, with ten remaining to be put in place by the end of calendar year 2000. One of these remaining policies is

the Water Resource Policy, which is currently in its draft form and going through the review process. In general, this policy provides direction for the development of the Port's Water Resource Program and includes stormwater issues.

Another policy scheduled for development is the Port's Facility and Property Management Policy, which will include management implications for construction and erosion control practices. Procedures, otherwise known as business processes describing how the Port intends to carry out its policies, are being developed to support all of the EMS elements. Although the Water Resource procedures have not yet been defined, BMPs are being developed at the operating areas to support the municipal stormwater requirements.

Another element of an EMS is to analyze an organization's environmental aspects and impacts. In the past year, the Port has made an extensive effort to look at all of its activities and determine what environmental aspects and impacts, if any, can be associated with each activity. This information is used to prioritize where the Port should be spending its resources and to establish environmental objectives and targets for the organization. This analysis will help determine which Port activities impact stormwater and the appropriate management practices to control or eliminate these impacts.

To support the EMS, a database was developed that contains each of the Port's environmental permits and clearly identifies the owner of these permits. The database also includes specific information about the commitments of each permit and the parties responsible for ensuring that these commitments are fulfilled. This database will assist managers in tracking the commitments they are responsible for and facilitating compliance with the permits.

During the Spring of 1998, Marine identified the need for an ongoing riverbank management program for the Port's 12 miles of riverbank property. In response to this need, the Port's Riverbank Management Plan has been developed and is now in its second year of implementation. Water quality and related issues such as the Title 3 regulations, proposed Goal 5 regulations, and the Endangered Species Act have all brought new attention to both the Columbia and Willamette Rivers. These changes present the opportunity to integrate environmental planning with land use planning in a new way and to take a more comprehensive view of Marine Terminal infrastructure. This multi-year program consists of a Riverbank Survey and a Management Plan that includes ongoing monitoring. BMPs are also part of the management plan and provide guidelines and actions for planning, maintenance and construction on and adjacent to Marine Department riverbanks. These BMPs were adopted with a commitment to review progress annually for each action area.

Many aspects of the Port's business, including stormwater management, have potential to impact wetlands. To address such issues, a Wetlands Management Plan is currently being developed as a key element of the EMS. The plan provides guidance for addressing wetlands issues on all Port properties and is to be used as a comprehensive tool to be applied by PDX, Marine, and Properties.

Task 2 – Assess water quality monitoring data collected from various sources, including Port industrial and municipal NPDES programs. Best management practices and policy will be reviewed and revised as necessary to better address the goal of meeting water quality criteria.

The permit year assessment of the water quality monitoring data for Municipal Permit compliance consists of a review of the industrial stormwater data and the data obtained from the City's monitoring program. The monitoring data collected for purposes of the Port's industrial stormwater compliance are included in Tables 2a through 4 of this report. The samples collected represent a cross section of the industrial activities occurring on the Port's property. Review of the permit jurisdiction data is included in the last section of the overall co-permittee report.

The permit year assessment of the BMP effectiveness monitoring data does not directly provide information on the quality of stormwater leaving Port property. The data was intended to provide information on the effectiveness of structural BMPs. The Port's municipal stormwater monitoring program includes the monitoring of four structural BMPs. The Port will shortly begin a full revision of the MSWMP and its BMP effectiveness monitoring approach. The data from the BMP analyses are presented in Tables 11 through 24.

Task 3 – ESD will assist each operating area in the development of site specific practices to ensure that all facilities remain in compliance with stormwater regulations and stormwater pollution prevention goals.

As in past permit years, the operating areas had the lead role in the development of on-site practices to ensure compliance with stormwater regulations and progress with stormwater pollution prevention goals during the permit year. The ESD provided guidance and motivation to continue stormwater practice development and implementation. New practices were documented and maintained in the operating area SWPCPs or other appropriate stormwater documents. If a new practice or BMP was implemented on Port property that was not covered by a site-specific SWPCP, then the practice was documented in the MSWMP and maintained by ESD at the corporate office. Figure 2 is the *Best Management Practice Summary Form* that has been developed and distributed to appropriate personnel to document new BMPs or practices in the operating areas. New practices are further described in the appropriate BMP Section.

BMP: ED1 - Employee Education

BMP Description:

Inform employees of new stormwater pollution control efforts and activities in each Port operating area. Provide guidance for implementing such, where applicable. Cooperate with the City's educational programs that relate to the Port operations.

Status

The Port continues to make substantial progress with the employee and tenant education BMP. Training, educational meetings, information exchanges, and presentations are designed and cover a variety of BMP topics ranging from de-icing/anti-icing procedures to spill prevention and response to other environmental regulations. The training agendas, list of attendees, and

summary of information presented during these sessions are maintained in either the operating area or ESD files or the Port MSWMP. Table 25 lists the stormwater-related training accomplished and attended during the permit year.

Implemented Activities

Task 1 – The Port will participate in informational meetings and other activities with the City of Portland and others, and disseminate applicable information to employees in each of the operating areas.

During the monitoring period, the Port continued to attend Association of Clean Water Agencies ("ACWA") and other stormwater-related meetings with fellow co-permittees. Specific examples include the ACWA Annual Conference, the ACWA Storm Water Summit, the 5th Annual Water Conference, the Portland Bureau of Environmental Services ("BES") Erosion Control Manual Training, and an Oregon Chapter of Air and Waste Management TMDL meeting. Information from these meetings is distributed to operating area staff, as applicable.

Task 2 – Operating areas will adopt practices, which include employee awareness of stormwater activities, as applicable.

Throughout the permit year, the Port operating areas continued to develop and improve employee awareness of stormwater management and pollution control. In October 1999, PDX conducted a Storm Water and De-icing Awareness seminar for several of its employees including the Aviation Maintenance Center Group, PDX Communications Center Group, and the Port Fire Department. Topics discussed included stormwater regulations NPDES permit requirements, potential stormwater pollutants, SWPCPs, BMPs, and illicit discharges. Marine provided similar training for its environmental staff in the Fall of 1999 and PSY offered stormwater BMP training for its supervisors in May 2000.

Other training during the permit year included courses on construction de-watering, erosion control, and de-icing practices for PDX construction, maintenance, and engineering personnel. Annual Spill Response and OSHA training was also offered to the General Maintenance, Environmental, and Fire Departments at PDX in the Fall of 1999. Marine personnel attended similar courses in spill response and environmental compliance in early 2000.

Port operating areas also hosted several guest speakers who presented information related to stormwater during their talks. For example, Kevin Masterson of DEQ spoke to both the PDX and Marine staff and tenants about the universal waste rules and the various DEQ programs, including the Water Quality Program, that offer technical assistance to applicants and permittees. Metro's Marc Terpel also spoke to Marine personnel about Metro's Title 3 Stream and Floodplain Protection Plan. Marine also presented the Port's Riverbank Management Plan to both Marine Terminal staff and tenants.

In addition to specific training courses and guest speakers, Marine, PDX, and PSY all continued to conduct regular staff and tenant meetings that contained environmental subjects related to stormwater. Topics frequently discussed included spill response procedures, equipment washing practices, hazardous waste management, water quality concerns, and erosion control and bank stabilization methods. PDX continued to hold monthly BMP Committee meetings, which include

both PDX tenants and staff, and conducted a meeting and facility walk-through with several aviation tenants to discuss the requirements of their revised SWPCP. Marine also conducted monthly tenant meetings, which included presentations and discussion on equipment and vehicle washing, spill prevention and response, and the Port's Riverbank Management Plan.

Training materials such as the slides, overheads, and videos that were developed by PDX and ESD in previous permit years, continued to be used for training and awareness meetings throughout the Port. These materials will be maintained and updated as needed for use as a part of Municipal Permit compliance.

Additional educational related activities that occurred during the permit year include the continued expansion of the PDX and Marine inlet stenciling programs. PSY completed its stenciling program during the last permit year, but continues to maintain the stencils on its inlets as part of routine maintenance. Experience in past years has proven that inlet stenciling is an effective educational tool that warns employees, tenants, and the general public against putting non-stormwater discharges into the stormwater system.

Task 3 – Evaluate the City's educational programs on water quality and make relevant information available to Port engineers, contractors, and tenants. Participate in City programs and disseminate educational materials as warranted.

The Port participated with the City and the other co-permittees in several stormwater meetings during the permit year. Both ESD and Properties Maintenance staff, for example, attended the City of Portland's Erosion Control Manual Training this year. Information from these types of meetings is distributed to the Port operating areas when applicable.

Task 4 – Initiate a tenant program that involves regular meetings and training for all regulated tenants whose activities may have an impact on the quality of Port stormwater runoff.

The Port Tenant Program continued to be developed and expanded during the permit year. Operating areas held regular tenant meetings where stormwater management issues and procedures were discussed. PDX further developed its BMP Committee program and used these monthly meetings to prepare and review the airport's updated SWPCP. Progress also continued in the Marine Tenant Program where seven new BMPs were developed and implemented. These BMPs addressed such issues as emergency response procedures (BMP003), environmental reporting and record keeping (BMP004), waste management (BMP006), hazardous waste, universal waste, and used oil management (BMP007), hazardous materials management (BMP008), facility and equipment maintenance (BMP009), and equipment and vehicle washing (BMP010). Several additional BMPs continue to be developed under this program including one for facility development and construction and another that addresses erosion and sediment control. These BMPs should be in place by the end of 2000. The Marine BMP development schedule is shown in Table 26. Marine also continued to use the tenant newsletter that was started during the last permit year, to keep tenants informed on current environmental issues at the Port.

PI1 - Public Programs

BMP Description:

Support public programs that increase public awareness of the importance of water quality protection.

Status

The Port continues to participate in a variety of public programs focused on increasing public awareness of the importance of water quality protection. While some of these programs do not address stormwater directly, many of their goals and objectives are closely related to the control of runoff and water pollution control. ESD also continues to relay any relevant public information and materials related to stormwater to Port operating areas and tenants.

Implemented Activities

Task 1 – Make public information about water quality events available to Port operating area staff.

Throughout the permit year, brochures, documents, and pamphlets related to stormwater were reviewed and distributed. Metro Haz-Waste information, spill procedures, and brochures developed by BES were also distributed to the operating areas. Water quality and stormwater information made available through the ACWA was also distributed to Port employees. Port employees were invited to attend educational events sponsored by the Columbia Slough Watershed Council.

Task 2 – Where practicable, designate appropriate Port programs or sites for demonstration projects connected with water quality awareness protections or enhancement.

The Port has completed a Columbia Slough revitalization effort on Port property in cooperation with the City of Portland. The revegetation project included restoration of approximately 20 acres of native riparian and upland habitat. The Port is also supporting and participating in a watershed assessment for the Columbia Slough Watershed. The assessment will involve community members and serve as a tool for watershed planning, guidance for development of action plans for watershed projects, and for education programs. The Port will continue to participate in projects connected with water quality protection and enhancement.

Task 3 - Work with BES and other agencies and organizations to promote the development of educational activities, materials, and tools.

During the permit year, the Port participated in several Stop Oregon Litter and Vandalism ("SOLV") events including a Riverside and Columbia Slough clean up in May of 2000. PDX environmental staff gave a de-icing presentation for the Water Environment School at Clackamas Community College and participated in a career talk related to stormwater BMPs for Apprentices in Science and Engineering's Saturday Academy. As with last year, PDX was also a co-sponsor with the City for the Columbia Slough Regatta event. Marine participated in several beach and riverbank clean-ups and plantings, including the Albina Dock planting project with BES. Marine

also contracted with the Multnomah Youth Council ("MYC") to take over the management of a portion of the shoreline on West Hayden Island as part of an ongoing riverbank project. PSY sponsored events with Headwaters to Oceans and the Willamette River Keepers and continued its involvement with Clean River Cooperative and the National Shipyards Research Program.

OM1 - Operations and Maintenance of Stormwater Quality Facilities

BMP Description:

Evaluate existing stormwater maintenance practices that affect water quality at stormwater quality facilities.

Status

The Port currently complies with two NPDES General Industrial Storm Water Permits for properties within the Portland Urban Services Boundary. These permits include a 1200-Z permit issued for T-6 and one 1200-COLS permit issued for PDX. In addition, the Port also complies with a Port-wide 1200-CA NPDES Permit for construction discharges to the stormwater system and Anti-icing/De-icing Waste Discharge and Construction Dewatering Discharge NPDES Permits for PDX and PIC. Cascade General is the operator for PSY and complies with the 1200-Z permit issued for that facility.

Operating area and PSY staff are responsible for evaluating stormwater maintenance practices on their facilities and updating their site specific SWPCPs and other environmental management plans as appropriate. Plan updates frequently include additional permit requirements and changes in stormwater practices implemented at the facility. General guidance on stormwater management is provided by ESD and included in the Port's MSWMP.

Implemented Activities

Each operating area has developed and implemented specific stormwater maintenance practices relevant to the Port and tenant operations occurring at the facility. Many of the maintenance practices have been established and implemented over the last few years of compliance or were in place prior to the regulations. Much of the work has already been accomplished, but there are a few new maintenance activities to report in this submission.

PDX

During the permit year, PDX revised its SWPCP to address the requirements of the 1200-COLS Permit. An updated section on site controls and stormwater BMPs was added that addressed such issues as storage tank containment, oil, fuel, and grease management, waste material and chemical disposal, erosion and sediment control, and stormwater facility maintenance procedures and schedules. This revised report discussed both the PDX and co-permittee responsibilities and included a section on record keeping and internal reporting procedures. Several new and revised inspection and maintenance forms were also included in this document. Figures 3 through 8 provide examples of some of these forms. Copies of the revised SWPCP were provided to all tenant co-permittees for compliance. PDX also continued progress on the updating of its spill control and response plan.

Throughout permit year, PDX maintenance and environmental staff continued to perform stormwater BMP maintenance activities according to the SWPCP schedules. Routine BMP maintenance completed include boom deployment, maintenance, and replacement; inlet protection and replacement; inlet filter installation, maintenance, and replacement; detention/quiescent pond cleaning; vegetative swale maintenance; oil/water separator maintenance; outfall maintenance; and catch basin inspection and cleaning. With the issuance of the new 1200-COLS Permit, PDX has also expanded the monthly inspections of their stormwater system to include additional outfalls, catch basins, and other components.

PDX has also continued to develop the Storm Water Drain Maintenance Management System ("SDMMS"), which is designed to log the Global Positioning System ("GPS") location, inspection results, cleaning schedule, structural condition, and filter condition information for each of the catch basins, inlets, and manholes on the facility. Once implemented, the system documentation records will be maintained in the PDX maintenance files and when a catch basin, inlet, or manhole is inspected, a record of the observation is completed and the information is transferred to the SDMMS.

PSY

Cascade General updated its Oil Spill Contingency Plan for Oregon and the PSY Oil Transfer Operations Manual during the permit year. The Ship to Shore Transfer, Consolidation, and Management of Hazardous Materials BMP was also incorporated into Cascade General's SWPCP for PSY.

Cascade General also continued to use and improve a computerized system for tracking routine maintenance tasks throughout the permit year. Stormwater-related maintenance activities performed at PSY include boom deployment, maintenance, and replacement; ballast water and dry-dock water treatment plant maintenance; catch basin cleaning, maintenance, and inspection, and yard sweeping. Records of these activities are maintained in their maintenance office. New maintenance procedures implemented during the permit year included a pilot study of Stormwatch® catch basin filtration systems for oil and grease removal.

Marine

Marine Environmental and Maintenance staff began updating the SWPCP and Spill Response Plan during the permit year. These documents are expected to be completed in the coming year and a training session is being developed for their issuance. Training will be provided to both Marine staff and tenants who are co-permittees on the T-6 1200-Z Permit.

Stormwater maintenance activities completed at T-6 throughout the last permit year included catch basin inspection and cleaning, oil/water separator maintenance, inlet filter maintenance and replacement, and facility sweeping. Degraded outfalls and eroding riverbanks were also repaired. An existing equipment wash area was reconstructed at T-6 with a new oil/separator that drains to the sanitary sewer system.

BMP field forms continued to be completed for all maintenance activities. This information was entered into the Marine Maintenance computer system, which tracks maintenance and

environmental inspection information. All cleaning and waste disposal records continued to be maintained in the Waste Stream Management Book in the T-6 Environmental Office.

Industrial Parks

As in the past, Properties Maintenance staff remained responsible for maintaining all Port landscaping within the industrial parks and the majority of the Marine Terminals. During the permit year, a gravel pad was installed for vehicle and equipment washing at their T-6 facility. Construction of a concrete pad for chemical, herbicide, and fertilizer mixing was also initiated. This mixing pad is designed to drain into a gravel area and will have outlets that can be shut-off in the event of a chemical spill.

OM2 - Operations and Maintenance - Streets and Vehicle Maneuvering Areas

BMP Description:

Evaluate operations and maintenance for the Port roads and vehicle-maneuvering areas to determine water quality impacts. Recommend improved procedures or practices that reduce the discharge of pollutants to the stormwater system.

Status

PDX, PSY, Marine, and Properties are each responsible for the maintenance of road and vehicle maneuvering areas in their respective areas. The maintenance plans and site specific SWPCPs address many of the operating and maintenance issues for roads and surfaces. Major maintenance tasks performed on Port roads and pavement areas include sweeping, de-icing (PDX), and surface repairs and painting (PDX).

Implemented Activities

Operating Area Sweeping

The most intensive effort concerning road and surface maintenance on Port properties during permit year continued to be pavement sweeping. All operating areas continued to perform sweeping at their facilities on a regular basis. PDX swept the airfield and any construction sites on a daily basis, PSY swept weekly and T-6 swept annually. During the permit year, sweeping at the Industrial Parks was regularly conducted by outside contractors. Records of sweeping continue to be maintained at PSY, PDX, and T-6 in the maintenance files.

The waste material handling procedures for swept material remained relatively unchanged during the permit year, with debris placed in storage bins or stockpiled in a manner that prevents contact with stormwater runoff. PDX began use of its new sweeper debris containment boxes in the Fall of 1999. The collected material continued to be tested for hazardous waste content and appropriately disposed of at Metro or Waste Management's Hillsboro Landfill. The sampling and disposal tracking records continue to be maintained in the operating area maintenance files. In some cases, information was also maintained by operating area environmental staff as part of waste stream management.

PDX De-icing

Throughout the permit year, the Port continued to conduct limited de-icing on non-airside pavements at PDX (e.g. streets, roads and parking areas outside the PDX security fence but within the airport boundaries) and the "No Urea Policy" for pavement de-icing implemented in May 1998 remained in effect. The De-icing and Anti-Icing Runoff Control Program for aircraft and airside pavements was continued through the 1999-2000 de-icing season. This program includes strategies to control, collect, and dispose of de-icing and anti-icing materials. Compliance with the de-icing permit is required for all co-permittees, including compliance with the schedule set forth in the TMDL for the Columbia Slough. This TMDL requires discharges to the Columbia Slough to comply with the numeric waste load allocations by the Winter of 2003-2004.

The schedule for implementation of the fully integrated anti-icing and de-icing control system was developed to follow the Option 2 schedule (modified to exclude a discharge to the Columbia River) in the stormwater discharge permit for de-icing and anti-icing materials. Meanwhile, PDX de-icing activities continued to be addressed by Port environmental staff, a consultant team, the PDX co-permittees, DEQ, and BES. The airside de-icing materials used at PDX are FAA approved and include sodium formate and potassium formate. Magnesium chloride, a material that is not approved by the FAA, is used for non-airside pavement de-icing only. A switch from potassium acetate to potassium formate occurred during the permit year.

The results of the de-icing season management activities and pilot projects during 1999-2000 are being compiled and will be submitted to DEQ in the *PDX 1999/2000 De-icing/Anti-icing Management Report* on or before August 15, 2000. This report will be available for review from the Port or Elliot Zais of DEQ.

The Port de-icing team and consultant are developing de-icing studies for the 2000-2001 season. The 2000-2001 PDX de-icing program will be documented in the Annual Runoff Control Plan due to DEQ on October 1, 2000. Many projects initiated last winter will be continued, including trench drain operation at concourses C and D for glycol collection and deployment of two Glycol Recovery Vehicles ("GRV"). Other de-icing management efforts to be implemented include using forced air de-icing methods for aircraft, employing a two step chemical application process for pavement deicers, varying aircraft de-icing material mix ratios based on ambient temperatures (to be done by airlines), and researching new de-icing technologies.

Records of the de-icing studies and projects continued to be maintained by Port environmental staff. Due to the extent of the projects, the amount of data, and the extensive coordination efforts, the PDX de-icing information is maintained independently of the PDX SWPCP and stormwater files.

PDX Surface Repairs

Throughout the permit year, roadway surface repairs and painting continued to be conducted by PDX Maintenance staff. Procedures for handling waste products and cleaning equipment related to pavement maintenance continued to improve through careful storage, application, and disposal. Several new features of the PDX maintenance facility were constructed to eliminate

exposure of stormwater and stormwater runoff to potential contaminants. These projects were completed in the Fall of 1999 and included extending the indoor equipment storage areas, building an equipment wash bay, building an unloading bay for sweeper and catch basin clean-out debris, and the installation of a toluene recovery system for paint and related products. Improved protocols and waste disposal procedures are documented in the revised PDX SWPCP.

Properties

During the permit year, the Properties Maintenance staff developed a Storm Water Discharge BMP for several activities related to streets and vehicle maneuvering areas at Marine's facilities. Targeted activities included outdoor storage areas for materials such as bark, compost, topsoil, and waste materials, fueling areas, material loading and unloading sites, and vehicle/equipment maintenance shops and wash pads. Control methods implemented included the required cleanup of granular material, sand, and dirt from roadways, the prohibition of vehicle washing, chemical mixing, and fueling operations in paved areas, the deployment of spill kits on chemical trucks, and erosion control requirements for landscape construction activities.

OM3 - Truck Hauling Practices

BMP Description:

Inform tenants and Port employees of City truck hauling practices.

Status

The Port operating area SWPCPs and standard operating procedures address vehicle operation and maintenance. The Port maintains a minimal fleet and transports a small enough quantity of significant materials that the truck hauling practices do not apply. As such, the Port has proposed that this BMP be removed from the Port's MSWMP in the NPDES Municipal Permit Renewal Application.

Implemented Activities

Task 1 – Continue BMPs for vehicle operation and maintenance.

The Port continued to maintain sound vehicle operation and maintenance practices throughout the permit year. Scheduled vehicle maintenance by Port staff was performed indoors to avoid off-site breakdowns that could cause leaks and exposure of significant materials to stormwater runoff. Metal trays continued to be installed on all new Properties Maintenance trucks to avoid any leaking of spilled materials during the transport of fertilizers and herbicides. The transportation of other materials on Port property continued to be performed by trained professional hauling and landscape contractors hired by the Port.

Task 2 – Distribute materials made available by the City and others.

The Port continued to distribute appropriate informational material concerning trucking practices and material handling practices to operating area staff, as applicable.

IND1 - Industrial Control

BMP Description:

Develop a program to control the discharge of pollutants in the stormwater system from existing and developing industries on Port property which are not already regulated by other NPDES requirements.

Status

The Port operating areas have been complying with the NPDES industrial stormwater permits since they were issued by DEQ. Table 1 lists the Port tenants that have individual NPDES permits and those that are complying with the stormwater industrial regulations as co-permittees to the operating area permits. All new tenants with ground leases and those with lease updates are required to enter into stormwater use agreements with the Port. A sample stormwater use agreement is attached as Figure 9. New tenants are also required to sign Construction Dewatering Agreements for construction projects that require de-watering and Storage Tank Use Agreements for operation of above ground and underground tanks. During lease negotiations, property inspections are conducted and stormwater permits and BMPs are discussed. Additional control over tenants includes Port Ordinance No. 361, which authorized the Port to conduct tenant inspections, eliminate illegal connections to the MS4 system, and enact penalties on known violators (Figure 10).

The Port Tenant Program addresses stormwater BMP implementation with all Port tenants that have the potential to impact Port stormwater quality. The tenant survey and tenant meetings performed during past permit years were the first steps in the Program. One goal of the Tenant Program continues to be the development and implementation of management practices to help reduce the amount of pollutants entering the stormwater runoff from existing and developing Port tenant properties.

Implemented Activities

During the permit year, several stormwater controls and BMPs have been implemented at the Port operating areas in accordance with their SWPCP schedules, requirements of the municipal stormwater program, and ESD or consultant recommendations. All tenant co-permittees are required to comply with these BMPs and practices, when applicable. The following actions have been planned and/or implemented throughout the past permit year:

PDX

- SWPCP updated and implemented
- Spill control and response plan revision initiated
- New toluene recovery system installed and in use
- New wash bay construction for maintenance equipment/vehicles completed and in use
- Storm inlet stenciling program continued
- Catch basin filters continue to be installed in PDX maintenance area
- Dewatering permit sampling and management practices finalized, and permit in effect
- Erosion control training information distributed to tenants and maintenance staff

PDX (cont.)

- Erosion control training meetings conducted
- Contractor erosion control plans for construction project required and inspected
- Tenant BMP committee meetings conducted regularly
- Stormwater and de-icing/anti-icing awareness training conducted
- Airside operations training sessions conducted
- Port Fire Department training sessions conducted
- OSHA and Spill Response training conducted
- Industrial stormwater monitoring performed
- Dry season inspections conducted
- BMP effectiveness monitoring performed for catch basin filters
- "No Urea Policy" enforced
- "No Wash Policy" enforced
- New sweeper and catch basin waste containment system constructed and in use
- BMP maintenance schedule developed and documented
- Stormwater training video shown at tenant and PDX staff training

PSY

- BMP for ship to shore transfer, consolidation, and management of hazardous materials implemented
- Oil Spill Contingency Plan for Oregon updated
- Oil Transfer Operations Manual updated
- Yard sweeping frequency increased
- Stenciled stormwater inlets maintained
- Industrial stormwater sampling performed

Marine

- SWPCP and spill control and response plan revision initiated
- Equipment wash facility at T-6 downsized and diverted to the sanitary sewer system
- New oil/water separator installed at T-6 equipment wash facility
- Inlet stenciling program continued
- Spill procedure labeling of large equipment at T-6 continued
- Spill response training provided to Environmental and Security staff in Spring 2000
- Spill response equipment inventory completed
- Hazardous cargo storage area completed and in use
- Industrial stormwater sampling performed
- Dry season inspections performed at all terminals
- BMP effectiveness monitoring performed for T-6 oil/water separator
- Spill Response BMP developed and implemented
- Emergency Response Procedure BMP developed and implemented
- Environmental Reporting and Record Keeping BMP developed and implemented
- Waste Management BMP developed and implemented
- Hazardous Waste, Universal Waste, and Used Oil Management BMP developed and implemented

Marine (cont.)

- Hazardous Materials Management BMP developed and implemented
- Facility & Equipment Maintenance BMP developed and implemented
- Equipment & Vehicle Washing BMP developed and implemented

Task 1 – Review the list of Port tenants to identify those facilities discharging to the Port's portion of the MS4 system which are regulated by SARA Title III, Section 313.

Superfund Amendments and Reauthorization Act ("SARA") Title III Section 313 facilities were identified through the Port-wide tenant survey distribution and information compilation conducted during past permit years. Efforts to maintain and update this information continued through the permit year. The tenant survey was the first phase in the Storm Water Tenant Program and continues to be used in the development of the Tenant Site Inspection and Tenant Follow-up Programs.

Task 2 – Develop procedures for investigating facilities subject to SARA Title III, Section 313 regulations.

SARA Title III, Section 313 facility inspection procedures have been researched during past permit years. No additional tasks were implemented during the permit year.

Task 3 – As warranted based on illicit discharge inspections and other water quality information, extend the procedures of Task 2 to other facilities which are determined to be contributing substantial pollutant loads to the Port's portion of the MS4 system.

Throughout the permit year, Marine continued to conduct tenant inspections. Marine performed annual inspections of tenant facilities for environmental safety and facility maintenance and engineering compliance. PDX began developing an inspection program for tenant facilities and construction sites to ensure compliance with the appropriate environmental permits. Properties also began work on a pilot project involving Phase I property inspections for property transactions.

ILL1 - Spill Prevention and Response Training

BMP Description:

Review required spill response procedures in each operating area. Refine procedures as necessary, including improving interagency collaboration.

Status

Spill prevention and response plans have been developed and implemented for PDX, T-6, and PSY. The Port operating areas have completed extensive spill training for relevant personnel. With the exception of PSY, these operating areas conduct training annually and provide refresher courses to introduce new procedures and techniques. PSY provides spill response and control training as part of its new employee orientation program. Spill training throughout the Port emphasizes employee responsibility for preventing releases to the storm system and receiving waters.

Emergency response actions have been established for PDX, T-6, and PSY, and employees have been trained in these procedures. The Port has on-call environmental response contractors for clean up and containment. The operating areas, as well as ESD, have compiled spill response phone contact lists. ESD, PDX, and Marine also operate 24-hour hotlines in order to respond to Port property spills at any time. PDX, T-6, and PSY have developed both stationary and mobile spill kits in order to respond to spills occurring at any location on the site. Properties Maintenance personnel also carry similar kits on their vehicles and equipment.

Implemented Activities

Task 1 – Participate in the City's spill response task force.

The Port continued to participate in City training events and attend the City's spill committee meetings during the permit year.

Task 2 – Distribute materials provided by the City.

Written materials regarding spills distributed at the spill response task force meetings have continued to be shared with operating area managers and staff. Any applicable future spill information from the task force meetings will be distributed to the operating area environmental personnel, as well as tenants during Tenant Program meetings.

Task 3 – Review and modify existing response procedures to include provisions for the protection of stormwater quality on a regular basis.

Throughout the permit year, operating area spill response plans have been updated and modified to include all stormwater requirements as listed in the 1200-COLS and 1200-Z permits. Both PDX and Marine initiated large-scale revisions of facility spill prevention and response plans during the permit year.

Task 4 – Ensure that all tenants on Port property have spill prevention and response plans in place.

Throughout the permit year, Port tenants continued to be encouraged to develop spill prevention and response plans for their individual facilities. Co-permittees complying with NPDES stormwater industrial permits were required to develop such plans as part of the 1200-COLS and 1200-Z permits. Tenants with Storm Water Use Agreements included in their lease were required to comply with Port SWPCPs, which include spill prevention and response procedures. The Port tenant inspection program, which will include the review of tenant spill prevention and response plans, continued to be developed during the permit year. Once this program is adopted, any industrial tenants that lack an implemented spill plan will be contacted for site review and plan development guidance, once protocols are in place.

ILL2 - Control of Illicit Discharges

BMP Description:

Detect and control illicit connections and discharges to the stormwater system.

Status/Implemented Activities

Task 1 – Develop and finalize a written plan with field procedures for identifying and investigating illicit discharges to the Port's portion of the MS4 system.

The written procedures for the IDDRP were finalized during the 1996-1997 permit year and remained in place during 1999-2000. The program is documented in the Port MSWMP, as well as in operating area environmental programs. The program contains the Port's procedures for enforcement of Port Ordinance 361 (Figure 10); dry season and wet season field screening; priority and schedule of major outfall inspections; and discharge sampling, tracking, and elimination. The IDDRP lists the Port's public, tenant, and employee awareness efforts and activities. Port spill prevention and response procedures are addressed as part of the IDDRP as required by 40 CFR 122.26 (d)(2)(iv)(B); however, the spill response procedures are maintained in separate documents located in the operating areas. The program description also discusses how priority outfalls were identified.

Tasks 2 – Continually integrate monitoring information from historical sources and Industrial Permits for Port and adjacent properties which discharge into the Port's portion of the MS4 system.

The Port continued to compile and review all relevant monitoring data for influence of non-stormwater discharges during the permit year. The operating areas, including Cascade General at PSY, were responsible for conducting wet season runoff observations, dry season inspections, and monthly inspections of potential significant material leakage or spillage areas. These inspections, along with stormwater sample collection and analysis, provided information to determine the presence of illicit discharges and their sources. Review of this year's industrial data suggests that that there are no illicit discharges or connections to the Port's stormwater system.

The data from the 1996 study and the results from the previous inspections were initially used to determine the Port priority outfalls and the schedule for dry season inspections for the remaining years of permit compliance. Outfalls are added or removed from the list throughout the permit term based on new data or inspection results. No new outfalls were added to the list during the permit year. However, Marine did request that two of its outfalls, one at T-1 (WW41PP) and one at T-4 (SJ28PP) be removed from the monitoring schedule, as these outfalls could not be found in the field. Review of the previous years of inspection data indicates that most non-stormwater discharges were not illicit discharges, but rather permissible discharges, as defined by 40 CFR 122.26 (d)(2)(iv)(B)(1).

Task 3 – Develop a 5-year schedule for investigation of all major outfalls based on the ranking results.

The IDDRP contains a description of the 5-year dry season inspection schedule. The schedule and priority are based on review of the data from the 1996 season, information collected during the 1993 and 1991 dry season studies, land use designations, and the location of significant material usage on Port properties. The current dry season inspection schedule is shown in Table 8. A revised inspection schedule will be prepared during the upcoming Municipal Permit renewal process.

Task 4 – Conduct inspection for illicit discharges during the dry periods of each fiscal year according to the schedule developed in Task 3.

For the 1999-2000 dry season, the operating areas, with the exception of PSY, inspected all priority outfalls in their jurisdiction, plus several of the outfalls identified for inspection for the 1999 season. The dry season observation results for the permit year have been compiled and are included as Table 9. If a non-stormwater discharge was observed, the inspection team collected a sample, completed in field screening analysis, and conducted a follow-up investigation. Samples collected from a non-stormwater discharge were analyzed for a list of parameters developed to help identify the source of the possible illicit discharge. Table 10 contains the sample results for the follow-up work that was conducted.

Task 5 – Coordinate with other municipal discharge programs as needed.

Throughout the permit year, the Port continued to coordinate with the City and DEQ during illicit discharge investigations. The Port participated with the City's illicit discharge elimination program ("IDEP"), sharing observation and investigation results and information.

Task 6 – Conduct follow-up inspections and enforcement tasks until observed illicit discharges are eliminated.

Follow-up and inspection procedures continued to be documented in the IDDRP. Aside from some sample analysis, no extended follow-up actions were necessary during the permit year, so no additions to the plan needed to be made. Flows observed during 1999-2000 dry season inspections were typically attributed to ground water seepage or irrigation water runoff.

ILL3 - Employee Haz-Mat Training

BMP Description:

Provide information to employees and tenants on where and how to properly dispose of oil, antifreeze, pesticides, paints, solvents, and other potentially harmful materials.

Status

The Port distributes information on hazardous materials training to employees and tenants. Operating areas also provide hazardous waste handling training to their employees, when applicable. The Port's Risk Management group maintains a Port-wide inventory of all hazardous

materials used throughout Port operated properties. Education on this BMP is also provided in the monthly BMP Committee meetings at PDX.

Implemented Activities

Task 1 – Distribute information provided by Metro on disposal locations for specific materials to all employees and tenants.

During the permit year, the Port continued to distribute relevant hazardous waste information obtained from the City and Metro to operating area staff and tenants. Operating area staff and maintenance groups worked together to improve staff awareness of proper handling, storage, and disposal of hazardous wastes. A number of improved waste disposal practices have been developed and incorporated into PDX and Marine maintenance protocols. Construction of the toluene recovery system that began last year at PDX was completed during the permit year, and this system is currently being used to separate hazardous waste constituents (toluene) from paint to allow for proper recycling and disposal. Marine has incorporated a number of new BMPs related to the storage, handling, and disposal of hazardous materials.

ILL4 - Illegal Dumping

BMP Description:

Reduce the potential for illegal dumping through active property management.

Status

Port operating areas have implemented procedures for dealing with illegal dumping and abandoned waste. Experience has shown that most illegal dumping is the result of tenants abandoning wastes after vacating Port-owned properties. Port methods of abandoned waste removal and property management continue to be effective in reducing this problem.

Implemented Activities

Task 1 – Continue efforts to promptly remove garbage from vacant properties.

During the permit year, the operating areas continued to remove any abandoned solid waste material from Port property and to work with Properties to track the potentially responsible parties. Waste materials were disposed of by an environmental contractor or by the regular disposal company, depending on whether the waste was characterized as hazardous or non-hazardous, respectively. Although most of the Port's facilities had only minor problems with illegal dumping and abandoned waste, PDX did report at least one significant incident during the permit year. In this case, the responsible party was identified and required to pay the disposal costs.

Task 2 – Continue program to limit vehicle access in areas where problems are encountered.

Where possible, fences and locked gates continued to be used to prevent illegal dumping. Cascade General completely fenced the PSY facility and employed 24-hour security throughout the permit year. In areas where it is not possible to block entrances to the Port property, signs and

warnings against illegal dumping continue to be posted. The Port landscaping crew, along with operating area maintenance personnel and other staff members, continue to look for abandoned wastes and respond to incidents as quickly as possible.

Task 3 – Cooperate with local jurisdictions and any regional programs to address illegal dumping.

The Port continued to coordinate with DEQ concerning illegal dumping of hazardous waste on Port properties. Illegal dumping is also addressed in the City led ILL1 spill response task force meetings regularly attended by Port personnel.

ND1 - Erosion and Sediment Control

BMP Description:

Apply practical erosion, sediment and other controls to reduce all pollutant discharges at construction sites associated with properties being developed by the Port.

Status

In addition to the Municipal Permit, all Port-owned properties are also covered under a 1200-CA NPDES Permit for construction stormwater discharges that was issued by DEQ in the Fall of 1997 (Permit No. 107018). This permit covers Port construction activities on 5 acres or larger. Tenants performing construction activities on 5 acres or more of Port property are required to obtain individual 1200-C NPDES Permits for their activities. Both the 1200-CA and 1200-C permits require the development of erosion control plans that must be approved by BES and Port staff. The Port also holds a Construction Dewatering Discharge NPDES Permit (Permit No. 107220) for the discharge of excavation wastewater at the PDX and PIC facilities. This permit authorizes construction de-watering discharges into the PDX/PIC stormwater system with eventual discharge to the Columbia Slough.

Implemented Activities

Task 1 – Comply with the 1200-CA NPDES Permit and provide associated erosion and sediment control training to Port employees and tenants.

Throughout the permit year, the Port continued to comply with the 1200-CA Permit for all projects on Port property. For such projects, Port engineers, together with construction contractors, compiled erosion control plan based on the 1200-CA requirements and the City's specifications for erosion control. All erosion control plans were reviewed and approved by BES, as well as Port staff. During the permit year, the Port also required that erosion control plans be submitted for construction projects with less than 5 acres of soil disturbance. Operating area environmental staff reviewed these plans for smaller projects.

The operating areas continued to conduct erosion control training sessions with Port engineers and Port construction inspectors. Staff from ESD and operating areas attended the City's Erosion Control Manual Training and incorporated this information into Port-wide training sessions. Several departments including Properties Maintenance are in the process of developing a Port erosion control plan. Erosion control compliance was also addressed in the Port-wide tenant

meetings. Port staff continued to review and approve erosion control plans or tenant 1200-C permits prior to the commencement of construction.

Task 2 – Develop and implement an excavation wastewater discharge program to comply with the requirements of the Construction Dewatering Discharge NPDES Permit issued by DEQ.

The Construction Dewatering Discharge NPDES Permit was issued to the Port during the previous permit year. Throughout the permit year, ESD and PDX environmental staff have continued to work together to develop permit compliance procedures. PDX environmental staff remained responsible for de-watering sampling, data compilation, and report submission for PDX projects. ESD provided technical oversight and assistance and was responsible for managing de-watering projects that occur on PIC property. Tenant construction projects were also included in the de-watering permit compliance work and were managed by both PDX staff and ESD.

Dewatering permit compliance procedures included submission of a contractor de-watering plan to PDX for review and approval. For tenant projects, a de-watering agreement is written and signed by the Port and the tenant. Dewatering samples are collected before any initial discharge occurs. The initial samples are analyzed for chemical oxygen demand ("COD"), total suspended solids ("TSS"), turbidity, volatile organic compounds ("VOCs"), total petroleum hydrocarbons, pH, and benzene, toluene, ethylbenzene, and xylene ("BETX") concentrations. Based on the sampling results, the discharge was treated or discharged to the system. For Port projects, the discharge was sampled monthly at the point of discharge to the Columbia Slough. For tenant projects, the discharge is monitored bimonthly, once at the end of the discharge pipe and once at the point of discharge to the Columbia Slough. Data was submitted monthly to DEQ as required by the de-watering permit.

The operating areas completed staff training on de-watering issues and monitoring requirements during the previous permit year. Updates to this training and additional training of new personnel continued to be provided. For example, the PDX Construction Inspection Group, General Maintenance Group, and Engineering Group received training during the Fall of 1999. Dewatering specifications also continued to be evaluated and revised as necessary.

STR1 - Structural Water Quality Facilities

BMP Description:

When warranted and appropriate, based on available water quality monitoring data, the Port will develop procedures for construction, maintenance, and monitoring of water quality facilities.

Status

The Port continues to participate in, and contribute to, water quality projects designed to improve the water quality of the Port and urban jurisdiction stormwater runoff. Structural stormwater control facilities continue to be installed as part of all Port construction projects.

Implemented Activities

Task 1 – The Port will track ongoing and planned water quality facility projects and improvements.

The Port continued its involvement in several water quality improvement projects including the Leadbetter and Rivergate water quality facilities, the capture and treatment of PSY dry dock stormwater runoff, the sampling and analysis of the de-icing runoff at PDX, and the treatment of the PDX new economy parking lot runoff. These projects were described in the 1996 annual report to DEQ.

Several stormwater quality structures were installed or modified on Port property during the permit year. Marine replaced an oil/water separator at the T-6 equipment wash area and re-routed this device to drain to the sanitary sewer system. An oil/water separator that drains to the stormwater system was also added at T-4, Berth 401, in the new crane Motor Control Center building. PDX added a new stormwater conveyance system with oil/water separators and catch basin filters as part of its Year 2000 Runway and Taxiway Improvement Project. Several Stormceptors® and similar treatment facilities, including sand filters and bioswales, have been installed on the PDX and PIC facilities in association with the Cascade Station and North Access/Airport Way projects. Additional filters were also added to the existing oil/water separators in the parking garage at PDX. The Properties Maintenance Department also constructed a new gravel wash pad at their T-6 facility.

Task 2 – Existing projects will be evaluated for their effectiveness in reducing the pollutant load in stormwater runoff, based on water quality data.

BMP effectiveness monitoring performed during the permit year included the evaluation of four structural stormwater facilities: a Stormceptor®, an oil/water separator, a series of catch basin filters, and a treatment swale. The results of this monitoring are presented in Tables 11 through 24 and discussed in the M1 – Water Quality Monitoring BMP section of this report.

IGC1 - Inter-Governmental Coordination

BMP Description:

Continue Port coordination with applicable agencies working on regulatory aspects of water quality protection including watershed management, combined sewer overflows, solid waste and recycling, and industrial waste source control. Cooperate with agencies to implement new source or non-source control practices where water quality data indicate the need for stormwater quality improvements.

Status

The Port is actively involved with a variety of environmental agencies and programs including the Portland Harbor Cleanup, the Bi-State Task Force, the Lower Columbia Estuary Program, the Columbia Slough Watershed Council, neighborhood associations, Oregon ACWA, Department of Agriculture, Columbia Corridor Association, Oregon Department of Transportation, American Association of Airport Executives, Air Waste Management Association, Metro Water Resources

Policy Advisory Committee, Clean Rivers Coalition, Willamette Restoration Initiative, Willamette Urban Endangered Species Act Coordination Group, and DEQ technical advisory committees.

Implemented Activities

Task 1 – The Port will continue to coordinate with relevant government agencies on water quality protection activities relevant to Port lands and activities.

The Port continued to coordinate with other government agencies on water quality protection activities relevant to Port properties and activities during the permit year. The Port participated in coordinated efforts in a number of projects, including the Radio Towers Mitigation site, and continued to work jointly with BES to perform revitalization efforts in and along Columbia Slough. Three actions were implemented during the permit year: revegetation of Port property along the Columbia Slough and adjacent sloughs, cost sharing in Columbia Slough monitoring required by the municipal NPDES permit, and cost sharing in monitoring required by the Columbia Slough TMDLs.

During the permit year, the Port also began development of a Port-wide Endangered Species Act 4(d) Action Plan. The purpose of the plan is to ensure the compliance with the National Marine Fisheries Service's ("NMFS") Final 4(d) Rule published July 10, 2000, provide the background information and a decision framework for evaluating the various, ongoing, regional 4(d) rule proposals, and to initiate a Port-wide process and develop a comprehensive strategy for addressing all ESA compliance issues through responsible environmental stewardship. Included in the action plan will be review of all Port-wide and operational activities (including stormwater management) to identify any categories of activities may be considered "take" under NMFS "take" guidance or may be addressed under the Municipal, Residential, Commercial, and Industrial ("MRCI") development limitation evaluation criteria. Findings will provide information so that modifications can be made to assure adequate controls are in place to protect endangered and threatened species. Potential changes to stormwater quality programs will continue to be evaluated in order to improve water quality for endangered species and increase protection and restoration of fish and wildlife habitat.

Task 2 – The Port will continue to require its industrial tenants to file for general industrial NPDES permits.

The Port tenants located in the industrial parks and the marine terminals were required to obtain stormwater permits either as a co-permittee with the Port or separately. Most of the PDX tenants with industrial activities regulated under the NPDES program remain covered under the Port's stormwater industrial permit as co-permittees. These co-permittees are required to comply with the permit requirements and the BMPs established in the PDX SWPCP. The tenants located at PSY are co-permittees on the Cascade General 1200-Z permit. All tenants with permits and all co-permittees are listed in Table 1.

During the permit year, the Port worked cooperatively with the City's Industrial Storm Water Team sharing information concerning tenant industrial activity, drainage areas, and outfalls. The team's objective is to bring all regulated industries in the Urban Services Boundary into

compliance with the stormwater regulations. The 1200-COLS permit requires additional industrial activities to obtain permits. The Port continued its coordination with the City to help identify facilities on Port property that may be affected.

Task 3 – The Port will evaluate its own water quality protection activities or structures on the basis of water quality monitoring results

The monitoring data collected for the Port's Industrial Storm Water Permits during the permit year are included in Tables 2a through 4. During the upcoming permit year, particular attention will be focused on developing BMPs in support of the 1200-COLS permit that is in effect to implement the TMDL.

Four structural BMPs were evaluated during the permit year. The information collected will be available to help support other efforts in BMP effectiveness evaluation through groups such as the ACWA. The results will be used by the Port to evaluate the use of structural BMPs for Port facilities and development projects. Changes being considered for the BMP effectiveness monitoring program for the upcoming permit term include new evaluation methods and evaluation of additional structural BMPs.

M1 - Water Quality Monitoring

BMP Description:

The Port will monitor stormwater to characterize typical discharges from the Port's municipal system.

Status

The Port Storm Water Monitoring Program was updated and submitted to DEQ in April of 1998. As previously discussed, the completed program components include Industrial Permit stormwater sampling, dry season monitoring, de-icing monitoring, tenant monitoring, and BMP effectiveness monitoring. The City has assumed responsibility for collection of the land use characterization data required by the Municipal Permit, with the Port providing financial support for this effort.

Implemented Activities

Monitoring accomplished by the Port during the permit year included Industrial Permit compliance monitoring, dry season inspection monitoring, and BMP effectiveness monitoring.

Industrial Stormwater Monitoring

The industrial stormwater samples were collected from representative outfalls at PDX, T-6, and PSY. The sample analysis represents runoff water quality from a wide range of industrial, commercial, and transportation activities on Port property. Sampling was performed by operating area staff trained in the sampling and data collection procedures of the Port's MSWMP. The Port's stormwater Industrial Permit compliance data are presented in Tables 2a through 4.

Tables 5 through 7 contain the calculated pollutant load estimates for the sampled outfalls and storm events. These calculations were based on the Rational Method (Q = CIA) using 24-hour precipitation data obtained from the City's HYDRA Rainfall Network.

Dry Season Monitoring

The Port's 1999-2000 dry season monitoring and sampling results are presented in Tables 9 and 10, respectively. Operating area staff collected this information using procedures set forth in the Port's MSWMP. Based on an evaluation of this information, no significant illicit discharges or illegal connections to the Port's portion of the MS4 system were identified during the permit year. Flows observed during dry season conditions were typically attributed to groundwater seepage or irrigation runoff.

BMP Effectiveness Monitoring

The Port's 1999-2000 BMP effectiveness monitoring focused on four BMPs: 1) a Stormceptor® water quality manhole at PIC, 2) a set of catch basin filters at PDX, 3) an oil/water separator at T-6, and 4) a stormwater treatment swale at the Rivergate industrial park. All of these BMPs ultimately discharge into the Columbia.

The Port collected water quality samples upstream and downstream of these BMPs. Samples were processed at a contract laboratory and the results analyzed to determine the change in inflow and outflow concentrations of selected constituents. Percent removal and effectiveness of the BMPs in removing stormwater pollutants were then evaluated. Monitoring results for each of these facilities are discussed below.

Stormceptor®

The Stormceptor® unit evaluated is located at PIC in an office and warehousing complex that is adjacent to the Columbia Slough. The 16-acre drainage area is characterized by light industrial and commercial activities including the loading and unloading of trucks, warehousing, and truck staging. Commercial activities are primarily associated with offices and administrative parking lots.

The Stormceptor® is a pollution prevention device that removes oil and water from stormwater in place of a conventional manhole. The unit can be divided into two components: the treatment chamber and the by-pass chamber. During low or normal conditions, stormwater flows into the by-pass chamber via the storm sewer pipe and then diverts into the treatment chamber through a weir and drop pipe configuration. Finally, the stormwater flows up through an outlet pipe and eventually discharges into the outlet sewer pipe. The Stormceptor® works based on the concept that oil and other liquids with a specific gravity less than water will rise in the treatment chamber and become trapped since the outlet pipe is submerged. Sediments are left behind in the treatment chamber because they settle to the bottom. During high flow conditions, stormwater that overflows the weir flows into the outlet sewer pipe instead of into the treatment chamber. This flow path helps prevent re-suspension of previously settled solids and heavy metals.

The Port collected samples from the inflow and outflow of the Stormceptor® on November 16, 1999 and May 10, 2000. The results of these sampling efforts are included in Tables 11 through 15. The results of their analysis are as follows:

Organics - Measurement of organic substances moving through the Stormceptor® on both sample dates were not conclusive. The stormwater did not contain high enough concentrations of organic materials to be measurable or meaningful. With these results, the investigators could not determine the BMP's effectiveness in removing these stormwater constituents.

Metals - The sample results for metals were inconclusive because of their low concentrations for both sample dates. For example, all measurements for lead resulted in non-detectable concentrations, except for one low outflow value during the May sampling. The data for zinc and copper contradicted each other. Data from the November sampling appeared to indicate a slight removal of zinc, whereas the May data appeared to show a slight increase in concentration. The copper data had the opposite trend, showing a small increase during November and a small decrease during May.

Solids - Because of the dilute nature of the stormwater samples, TSS concentrations above the detection limit (5 mg/L) were only found in one of four samples during the November sample event. One effluent sample had a TSS concentration of 15 mg/L. During May, only one of four stormwater samples had a detectable reading of 7.5 mg/L for stormwater entering the Stormceptor® unit.

Bacteria - Results from bacterial sampling indicated that some removal of bacteria may be occurring as stormwater passes through the Stormceptor®. The bacterial concentrations were sufficiently low, however, to make these results unreliable. Biological tests, like those done to measure E. Coli, have sufficient variability to mask slight changes in bacterial concentrations.

Nutrients - The results for total phosphorus and orthophosphate analysis in November indicated no removal of either of these compounds by the Stormceptor®. The data for May indicated a slight removal of total phosphorus.

Overall, the stormwater samples from the inflow and outflow of the Stormceptor® unit at PIC generally had very low concentrations of all pollutant parameters. All pollutant concentrations were below their respective benchmarks in the new 1200-COLS permit. The dilute nature of the constituents in these samples made it difficult to analyze the effectiveness of the Stormceptor® unit in removing pollutants. Results tended to contradict one another. For example, the Stormceptor® appeared be effective at removing metals and solids on one sample date, but not on the other, and for one type of metal but not another. The results from these monitoring efforts were similar to those from work performed on May 12, 1998. The 1998 data showed very dilute, non-detectable concentrations of TSS and oil and grease, and contradictory results for metal removals.

Catch Basin Filters

The catch basin filters evaluated are located at the Port's maintenance facility in an area that receives heavy industrial activity. The surrounding drainage area includes industrial activities such as gasoline storage, vehicle refueling, vehicle maintenance, vehicle storage, vehicle and

equipment washing, and material storage. Port staff installed Stream Guard® Type II-0 filters in catch basins in this area to remove stormwater pollutants. This type of filter is designed to remove oil, grease, and floatables in runoff with low to moderate amounts of sediment. Each unit has specially modified hydrophobic and oleophilic polypropylene materials in the bag. As water flows through the filter bag, the various components of the unit absorbs oil. The manufacturer recommends that the unit be replaced approximately every two to four months.

Water quality samples were collected from three locations (two inlets and one outlet) to evaluate the filter's effectiveness in removing stormwater pollutants. The two inlets are upstream of the filters and the outlet is downstream from the filters. These are only two of several inlets that feed into the same pipe system. PDX environmental staff collected filter effectiveness samples on February 14, 2000 between 1:50 and 2:30 PM and April 28, 2000 around 2:00 PM. The first sampling date was preceded by less than 24 hours of dry weather. At this time, the area around the inlets was in good condition overall. However, the filter in Inlet 2 was not properly fitted in the catch basin and water was not passing through the filter. The second sampling date was preceded by more than 72 hours of dry weather. There was a slight sheen on the water entering Inlets 1 and 2 on that day. The results of these sampling efforts are included in Tables 16 through 18. The results of their analysis are as follows:

Organics - The catch basin inserts appeared to be performing well in removing organic materials in the form of oil and grease. The apparent removal effectiveness is on the order of 40 to 50 percent.

Metals - The catch basin filters appeared to be performing well in removing the detectable metals: barium and lead. The apparent removal effectiveness is on the order of 60 to 80 percent.

Solids - The catch basin filters appeared to be performing well in removing solids. The apparent removal effectiveness is on the order of 90 percent.

Despite these results, the removal effectiveness of the catch basin filters could not be precisely determined because of the layout of the pipe network. The outflow concentrations are affected not only by the performance of the inlet filters, but also by the contributions of stormwater constituents and flow from other stormwater inlets that are also connected to the same outlet pipe.

Overall, the inlet filters appeared to be performing well in removing solids, oil and grease, and metals. The concentration of stormwater pollutants entering these BMPs at the selected site was high enough to allow reasonable estimation of their effectiveness. The physical layout of the pipe system; however, precluded precise evaluation of their effectiveness, since the outflow concentrations are affected by other sources of flow and pollutants. Proper installation, maintenance, and replacement of these filters is necessary to ensure that they continue to perform as intended.

Oil/Water Separator

The oil/water separator that was monitored is located at T-6 at a fuel island with above ground tanks, a concrete fueling pad, and automatic shut off valves. The fuel island itself is located in the southwest boundary of the T-6 facility in Drainage Basin 5. Stormwater drains from the

sloped fuel pad into two catch basins that connect to the oil/water separator. Only stormwater from the fuel pad is processed in the separator. The industrial activities occurring in the area that drain to the oil/water separator includes vehicle fueling and fuel storage. After the stormwater is processed in the oil/water separator, it collects in Drainage Basin 5. The industrial activities occurring throughout Drainage Basin 5 include gasoline storage, gasoline transfer, diesel storage and transfer, container storage, and maintenance and vehicle storage and maintenance. This basin discharges off-site via underground concrete pipe to City of Portland, Marine Drive pipes. The discharged water then proceeds across the street to a vacant lot through a temporary swale and then into the Columbia Slough through a large temporary dredge pipe approximately 48-inches in diameter.

The purpose of monitoring the oil/water separator is to help determine in-field effectiveness. Several variables, such as spills in the area, debris flow, and frequency of maintenance, impact the effectiveness of the unit. One of the monitoring objectives is to determine and control some of the variables in the system. T-6 environmental staff collected water quality samples from the unit's two sampling access points, the inflow pipe and the outflow pipe, on September 14, 1999 and July 3, 2000. The data from this sampling is presented in Tables 19 through 22. The analysis of this data is discussed below.

Organics - The oil/water separator was effective in removing oil and grease on September 14, 1999. The high influent concentrations of 150 to 180 mg/L were reduced to non-detectable concentrations. The separator removed greater than 95 percent of incoming oil and grease. The incoming concentration of oil and grease on July 3, 2000 was too dilute to evaluate effectiveness. Both the influent and effluent concentrations were non-detectable at a method reporting limit of 5 mg/L.

Solids - The oil/water separator exhibited some effectiveness in removing solids during the July sampling event. TSS were reduced from 12 mg/L to 6 mg/L, a reduction of 50 percent.

The oil/water separator is performing well in removing organic materials in the form of oil and grease, especially when these materials are at high concentrations in the influent flow. During one of the sampling events, the oil/water separator removed more than 95 percent of the incoming oil and grease. The separator appears to be working less effectively in removing pollutants when the influent concentrations are lower. The data on toluene and xylene showed an increase in concentrations moving through the oil/water separator, perhaps indicating that the stormwater is picking up residual materials left in the unit from previous discharges. Regular maintenance and cleaning of the oil/water separator will increase its ability to perform as intended, and help prevent stormwater from picking up leftover residual materials.

Bioswale

A swale located near the Ramsey Lake area of Rivergate industrial park receives stormwater runoff from adjacent Port property, including undeveloped fields and tenant warehouse areas. This swale is approximately 1000 feet long and varies in width from approximately 20 to 40 feet. The swale runs parallel to the existing railroad tracks and is vegetated on both banks with grasses, shrubs, and other vegetation. Side slopes on the swale are approximately 2.5 horizontal to 1 vertical (2.5:1). Stormwater runoff enters the swale near its southwestern end via an

approximately 42-inch diameter concrete culvert. Stormwater travels the length of the swale before discharging into the Columbia Slough via an approximately 36-inch diameter corrugated metal pipe ("CMP").

The original intention for sampling this swale was to evaluate water quality in the swale and its relationship to colored water observed on one end of the swale. Therefore, the investigators did not attempt to meet the regulatory requirements for storm conditions preceding the sampling. However, evaluation of this swale as a BMP seems pertinent to the Port's evaluation of BMP effectiveness. The swale receives stormwater discharges and removes pollutants through several pollutant removal mechanisms including sorption, filtration, sedimentation, and biological action.

The Port collected water quality samples from this swale at the 42-inch diameter culvert discharging into the swale and from the 36-inch diameter CMP discharging out of the swale on June 12, 2000. It was raining 3 days prior to this date, but ceased on the morning of the sampling. Samples were collected between 10 and 11 AM. Data collected during this period are shown in Tables 23-24. Sample analysis is discussed below.

Organics - Organic substances--measured as BOD and oil and grease--were removed as water passed through the swale. The BOD test results indicate that the concentration of organic materials decreased more than 50 percent as the water passed through the swale. The oil and grease measurements showed a slight decrease in their concentration, although the inflow and outflow concentrations were both close to the method reporting limit.

Metals/Color - The concentration of iron and manganese decreased significantly as water passed through the swale. The concentration of iron was reduced by approximately 70 percent. The concentration of manganese was reduced by approximately 85 percent. The combined evidence of the colored, yellowish water, low dissolved oxygen (2 to 3 mg/L), and presence of iron bacteria would indicate that water chemistry in the swale is influenced significantly by biologically mediated oxidation/reduction and precipitation reactions. These reactions typically occur where anaerobic conditions cause iron and manganese to become soluble and enter the water column. When conditions change and more oxygen is added to the water, the iron and manganese compounds form yellow or rust-colored colloids and precipitates that fall from solution. The source of the iron and manganese can be natural, from the rocks and soil, or anthropogenic, from metal pipes or industrial materials. The absence of dissolved oxygen in water typically occurs as a result of biodegradation of organic materials.

Solids - The results show that the concentration of TSS decreased as the water passed through the swale. The TSS outflow concentration was one third of the TSS inflow concentration.

Bacteria - The analysis showed the presence of iron bacteria in both inflow and outflow samples. The laboratory identified the presence of these bacteria, but did not enumerate them.

Nutrients - The concentration of total phosphorus increased slightly as water passed through the swale. The concentration of sulfate increased as water passed through the swale. Both of these conditions may be associated with oxidation-reduction reactions that are occurring

simultaneously in the swale, which cause phosphorus and sulfur-containing compounds to become soluble.

Overall, the swale located in the Ramsey Lake area seems to remove many of the pollutants that pass through it, making it a useful stormwater treatment BMP. Because this swale was not constructed for stormwater treatment, it is not optimally designed for this purpose. The swale could be improved both in terms of its ability to remove stormwater pollutants and its habitat value by modifying slopes, planting appropriate vegetation, and increasing the physical complexity of the system. The yellowish water in the swale is associated with iron, manganese, and sulfur compounds that form as a result of oxidation-reduction reactions. The dissolved oxygen concentrations in the swale water column varied from approximately 2 to 3 mg/L. The concentration of dissolved oxygen dropped off in the bottom sediment to approximately 0.5 to 1 mg/L. The pH of the water in the swale varied from approximately 6.5 near the stormwater inlet to approximately 6.8 near the outlet. The bottom sediment was dark, showing signs of anaerobic conditions. The water quality conditions in the swale are being influenced by complex biochemical reactions associated with the presence of iron, manganese, sulfur, organic materials, and the microorganisms that metabolize these compounds.

LM1 - Landscape Maintenance Practices

BMP Description:

Review landscaping maintenance practices. Recommend the use of vegetation that reduces the need for pesticides, herbicides, fertilizers, and water where practical.

Status

The Port continues to review and improve landscape maintenance practices at its operating areas and industrial parks. The Port Properties Maintenance crew is responsible for the landscaping and maintenance of Port industrial properties as well as the Marine properties. PDX has its own maintenance crew for its facility. Both crews attend local agency meetings and work with the Department of Agriculture on vegetation management. Properties Maintenance crews also work with the Portland Parks and Recreation Department to stay current on pesticide application licensing requirements, regulations, and techniques. All chemical applications on Port property are conducted by licensed applicators who attend continuing education sessions annually. All chemicals are used according to manufacturer instructions.

Implemented Activities

Both the PDX and Properties Maintenance crews continued to incorporate an integrated pest management approach to landscaping during the permit year. A variety of techniques, including biological controls, physical controls such as mowing, and native plant selection, were used to minimize chemical applications on Port property. Also, intensive field surveys were conducted to accurately assess pest conditions, and thus limit unnecessary chemical applications. Other implemented practices include the use of mulching, composting, aeration, slow-release fertilizers, and drip irrigation where applicable.

Throughout the permit year, the Properties Maintenance crew continued to play an active role in wetland mitigation. The crew continued involvement in three wetland mitigation projects in the

Rivergate and Swan Island industrial parks, performing a variety of landscape planting and general maintenance duties. PDX also began working on a plan to re-vegetate a damaged bioswale that receives drainage from the airport's Economy parking facilities.

The Properties Maintenance BMP implemented during the permit term also addressed several landscape related issues, including chemical handling practices and landscape construction practices. The Properties Maintenance crew, for example, is required to clean up all liquid herbicide spills on roadways, remove turf edgings from roadways, and implement appropriate erosion control measures in landscape construction.

Appendix A – List of Tables

Table 1	Port of Portland Tenant NPDES Permit Status
Tables 2a-2o.	PDX 1999-2000 Industrial Stormwater Monitoring Data
Table 3	T-6 1999-2000 Industrial Stormwater Monitoring Data
Table 4	PSY 1999-2000 Industrial Stormwater Monitoring Data
Table 5	Industrial Stormwater Monitoring Pollutant Load Estimates for PDX
Table 6	Industrial Stormwater Monitoring Pollutant Load Estimates for PSY
Table 7	Industrial Stormwater Monitoring Pollutant Load Estimates for T-6
Table 8	Dry Season Stormwater Outfall Inspection Schedule
Table 9	1999/2000 Dry Season Stormwater Outfall Inspection Observations
Table 10	1999/2000 Dry Season Stormwater Sampling Results
Table 11	Stormwater Monitoring Results – Stormceptor® at PIC November 16, 1999
Table 12	Stormwater Monitoring Results – Stormceptor® at PIC May 10, 2000
Table 13	Inflow and Outflow Data Summary – Stormceptor® at PIC November 16, 1999
Table 14	Inflow and Outflow Data Summary – Stormceptor® at PIC May 10, 2000
Table 15	Stormwater Monitoring Results – Stream Guard Filters at PDX- February 14, 2000
Table 16	Stormwater Monitoring Results – Stream Guard Filters at PDX- April 28, 2000
Table 17	Inflow and Outflow Data Summary – Stream Guard Filters at PDX- February 14, 2000
Table 18	Inflow and Outflow Data Summary – Stream Guard Filters at PDX- February 14, 2000
Table 19	Stormwater Monitoring Results – Oil/Water Separator at T-6 – September 14, 1999
Table 20	Stormwater Monitoring Results – Oil/Water Separator at T-6 – July 3, 2000
Table 21	Inflow and Outflow Data Summary – Oil/Water Separator at T-6 – September 14, 1999
Table 22	Inflow and Outflow Data Summary – Oil/Water Separator at T-6 – July 3, 2000
Table 23	Water Quality Testing Results – Ramsey Lake Area Bioswale – June 12, 2000
Table 24	Inflow and Outflow Data Summary – Ramsey Lake Area Bioswale – June 12, 2000
Table 25	Environmental Training During the July 1, 1999 to June 30, 2000 Permit Term
Table 26	Marine BMP Development Schedule

TABLE 1
PORT OF PORTLAND TENANT NPDES PERMIT STATUS

FACILITY	TENANT NAME	CO-PERMITTEE	PERMIT TYPE
Portland International Airport			
	533 MA L.L.C.	Yes	1200-COLS
	AirBC	Yes	1200-COLS, De-icing
	Airborne Express	Yes	1200-COLS, De-icing
	Aircraft Services International Group	Yes	1200-COLS
	Airport Terminal Services, Inc.	Yes	1200-COLS, De-icing
	Alaska Airlines	Yes	1200-COLS, De-icing
	America West Airlines	Yes	1200-COLS, De-icing
	American Airlines	Yes	1200-COLS, De-icing
	Ameriflight	Yes	1200-COLS, De-icing
	Avis Rent-A-Car	Yes	1200-COLS
	BAX Global	Yes	1200-COLS, De-icing
	Bonneville Power Association	Yes	1200-COLS
	Budget Rent-A-Car	Yes	1200-COLS
	Cargolux	Yes	1200-COLS, De-icing
	Continental Airlines	Yes	1200-COLS, De-icing
	Delta Airlines, Inc.	Yes	1200-COLS, De-icing
	Dobbs International Services	Yes	1200-COLS
	Dollar Rent-A-Car	Yes	1200-COLS
	Dynair	Yes	1200-COLS
	Emery Worldwide (Cargo)	Yes	1200-COLS, De-icing
	Emery Worldwide Airlines	Yes	1200-COLS, De-icing
	Empire Airlines	Yes	1200-COLS, De-icing
	Evergreen Aviation Ground Logistics, Inc.	Yes	1200-COLS, De-icing
	Express One International	Yes	1200-COLS, De-icing
	Federal Express Corporation	Yes	1200-COLS, De-icing
	Flightcraft, Inc.	Yes	1200-COLS, De-icing
	Frontier Airlines	Yes	1200-COLS, De-icing
	Harbor Air, Inc.	Yes	1200-COLS, De-icing
	Hawaiian Airlines	Yes	1200-COLS, De-icing
	Hertz Corporation	Yes	1200-COLS
	Horizon Air Industries, Inc.	Yes	1200-COLS, De-icing
	Jet Stream Northwest	Yes	1200-COLS, De-icing
	Kitty Hawk Aircargo, Inc.	Yes	1200-COLS, De-icing
	LSG/Sky Chefs	Yes	1200-COLS
	National Car Rental	Yes	1200-COLS
	Nippon Cargo Airlines	Yes	1200-COLS, De-icing
	Northwest Airlines	Yes	1200-COLS, De-icing
	Ogden Aviation	Yes	1200-COLS
	Oregon Air National Guard	No, Independent	1200-COLS 1700-A (engine washing) De-icing
	PacifiCorp Trans, Inc.	Yes	1200-COLS
	Portland Fueling Facilities Corp.	Yes	1200-COLS
	RSG Forest Products	Yes	1200-COLS

TABLE 1
PORT OF PORTLAND TENANT NPDES PERMIT STATUS (Cont.)

FACILITY	TENANT NAME	CO-PERMITTEE	PERMIT TYPE
Portland International Airport (Cont.)			
	SkyWest Airlines Flight Operations	Yes	1200-COLS, De-icing
	Southwest Airlines	Yes	1200-COLS, De-icing
	Trans World Airlines	Yes	1200-COLS, De-icing
	United Airlines	Yes	1200-COLS, De-icing
	United Parcel Service	Yes	1200-COLS, De-icing
	U.S. Postal Service	Yes	1200-COLS
Portland Ship Repair Yard	Cascade General, Inc.	Operator	1200-Z
	Subtenants		
	Allied Security, Inc.	Yes	1200-Z
	American Bureau of Shipping	Yes	1200-Z
	Columbia Wire & Iron Works, Inc.	Yes	1200-Z
	Delta Queen Steamboat Company	Yes	1200-Z
	Farr West Marine, Inc.	Yes	1200-Z
	FOSS Environmental	Yes	1200-Z
	International Inspections	Yes	1200-Z
	International Paint	Yes	1200-Z
	John C. Murdoch, Inc.	Yes	1200-Z
	Kleen Blast	Yes	1200-Z
	Lips Propellers, Inc.	Yes	1200-Z
	Marine Propulsion Services, Inc.	Yes	1200-Z
	Marine Spill Response Corporation	Yes	1200-Z
	Nozl-Tech, Inc.	Yes	1200-Z
	Pacific Dynamics Corporation	Yes	1200-Z
	Steelhead Construction	Yes	1200-Z
	Thermal Services, Inc.	Yes	1200-Z
	Tyco Submarine Systems, Ltd.	Yes	1200-Z
	U.S. Coast Guard	Yes	1200-Z
	U.S. Filters	Yes	1200-Z
	W&O Supply, Inc.	Yes	1200-Z
	West Coast Marine Cleaning, Inc.	Yes	1200-Z
Marine Terminals			
T-2	Stevedoring Services of America, Inc.	No	1200-Z
T-4	Kinder Morgan Bulk Terminals	No	1200-Z
	International Raw Materials	No	1200-Z
	Port of Portland	No	GEN-15A
T-5	Alcatel Submarine Networks, Inc.	No	GEN-01
	Portland Bulk Terminals	No	NPDES Permit #101377
T-6	Port of Portland	No	1200-Z, 1200-CA (Port-wide)

TABLE 1
PORT OF PORTLAND TENANT NPDES PERMIT STATUS (Cont.)

FACILITY	TENANT NAME	CO-PERMITTEE	PERMIT TYPE
Industrial Parks			
Swan Island	Eastern Oregon Fast Freight Truck Line	No	1200-T
Port Center	Freightliner Corporation	No	1200-Z
Portland International Center	Bechtel Infrastructure Corporation	No	GEN-13
Tanker Basin	Chevron USA, Inc.	No	1200-H
	Tosco Corporation	No	GEN-05
	McCall Oil and Chemical Corporation	No	GEN-05

TABLE 2a
PDX 1999 – 2000 1200-T NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: July 1, 1999 – February 10, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 1

Monitoring Parameter	Analytical Method	Method Reporting Limit	Discharge Limitations	Fall Sampling Event [1] November 9, 1999
General Chemistry:	Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	N/A	10.0
Total Phosphorus	EPA 365.3	0.0350	N/A	0.158
Total Organic Carbon (TOC)	EPA 415.1	3.00	N/A	8.22
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	N/A	19.5
Oil and Grease	NWTPH-Dx[2]	0.250 Diesel Range	10	ND
		0.500 Heavy Oil Range		ND
pH	N/A	N/A	6-9 SU	7.1[3]
Metals:				
Arsenic	200.8	0.00100	N/A	0.00160
Cadmium	200.8	0.00100	N/A	ND
Chromium	200.8	0.00100	N/A	0.00160
Copper	200.8	0.00200	N/A	0.00440
Lead	200.8	0.00100	N/A	ND
Mercury	245.1	0.000200	N/A	ND
Nickel	200.8	0.00200	N/A	0.00330
Zinc	200.8	0.00500	N/A	0.0175

[1] Chemical analyses performed by North Creek Analytical, Beaverton, Oregon.
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2b
PDX 1999 – 2000 1200-T NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: July 1, 1999 – February 10, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 2

Monitoring Parameter	Analytical Method	Method Reporting Limit	Discharge Limitations	Fall Sampling Event [1] November 9, 1999
General Chemistry:	Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	N/A	ND
Total Phosphorus	EPA 365.3	0.0350	N/A	0.0838
Total Organic Carbon (TOC)	EPA 415.1	3.00	N/A	9.09
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	N/A	24.3
Oil and Grease	NWTPH-Dx[2]	0.250 Diesel Range	10	ND
		0.500 Heavy Oil Range		ND
pH	N/A	N/A	6-9 SU	7.6[3]
Metals:				
Arsenic	200.8	0.00100	N/A	ND
Cadmium	200.8	0.00100	N/A	ND
Chromium	200.8	0.00100	N/A	0.00160
Copper	200.8	0.00200	N/A	0.00800
Lead	200.8	0.00100	N/A	0.00240
Mercury	245.1	0.000200	N/A	ND
Nickel	200.8	0.00200	N/A	ND
Zinc	200.8	0.00500	N/A	0.0553

[1] Chemical analyses performed by North Creek Analytical, Beaverton, Oregon.
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2c
PDX 1999 – 2000 1200-T NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: July 1, 1999 – February 10, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 4

Monitoring Parameter	Analytical Method	Method Reporting Limit	Discharge Limitations	Fall Sampling Event [1] November 9, 1999
General Chemistry:	Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	N/A	18.0
Total Phosphorus	EPA 365.3	0.0350	N/A	0.179
Total Organic Carbon (TOC)	EPA 415.1	3.00	N/A	11.1
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	N/A	30.5
Oil and Grease	NWTPH-Dx[2]	0.250 Diesel Range	10	ND
		0.500 Heavy Oil Range		ND
pH	N/A	N/A	6-9 SU	7.6[3]
Metals:				
Arsenic	200.8	0.00100	N/A	ND
Cadmium	200.8	0.00100	N/A	0.00140
Chromium	200.8	0.00100	N/A	0.00160
Copper	200.8	0.00200	N/A	0.0131
Lead	200.8	0.00100	N/A	0.00320
Mercury	245.1	0.000200	N/A	ND
Nickel	200.8	0.00200	N/A	0.00290
Zinc	200.8	0.00500	N/A	0.0854

[1] Chemical analyses performed by North Creek Analytical, Beaverton, Oregon.
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2d
PDX 1999 – 2000 1200-T NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: July 1, 1999 – February 10, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 6

Monitoring Parameter	Analytical Method	Method Reporting Limit	Discharge Limitations	Fall Sampling Event [1] November 9, 1999
General Chemistry:	Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	N/A	17.0
Total Phosphorus	EPA 365.3	0.0350	N/A	0.512
Total Organic Carbon (TOC)	EPA 415.1	3.00	N/A	12.4
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	N/A	32.9
Oil and Grease	NWTPH-Dx[2]	0.250 Diesel Range	10	ND
		0.500 Heavy Oil Range		ND
pH	N/A	N/A	6-9 SU	7.2[3]
Metals:				
Arsenic	200.8	0.00100	N/A	0.00340
Cadmium	200.8	0.00100	N/A	0.00210
Chromium	200.8	0.00100	N/A	0.00130
Copper	200.8	0.00200	N/A	0.0104
Lead	200.8	0.00100	N/A	0.00170
Mercury	245.1	0.000200	N/A	ND
Nickel	200.8	0.00200	N/A	0.00490
Zinc	200.8	0.00500	N/A	0.0399

[1] Chemical analyses performed by North Creek Analytical, Beaverton, Oregon.
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2e
PDX 1999 – 2000 1200-T NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: July 1, 1999 – February 10, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 7

Monitoring Parameter	Analytical Method	Method Reporting Limit	Discharge Limitations	Fall Sampling Event [1] November 9, 1999
General Chemistry:	Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	N/A	35.0
Total Phosphorus	EPA 365.3	0.0350	N/A	0.340
Total Organic Carbon (TOC)	EPA 415.1	3.00	N/A	11.6
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	N/A	31.5
Oil and Grease	NWTPH-Dx[2]	0.250 Diesel Range	10	ND
		0.500 Heavy Oil Range		ND
pH	N/A	N/A	6-9 SU	7.1[3]
Metals:				
Arsenic	200.8	0.00100	N/A	0.00140
Cadmium	200.8	0.00100	N/A	0.00140
Chromium	200.8	0.00100	N/A	0.00230
Copper	200.8	0.00200	N/A	0.0140
Lead	200.8	0.00100	N/A	0.00510
Mercury	245.1	0.000200	N/A	ND
Nickel	200.8	0.00200	N/A	0.00360
Zinc	200.8	0.00500	N/A	0.131

[1] Chemical analyses performed by North Creek Analytical, Beaverton, Oregon.
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2f
PDX 1999 – 2000 1200-T NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: July 1, 1999 – February 10, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 8

Monitoring Parameter	Analytical Method	Method Reporting Limit	Discharge Limitations	Fall Sampling Event [1] November 9, 1999
General Chemistry:	Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	N/A	35.0
Total Phosphorus	EPA 365.3	0.0350	N/A	0.228
Total Organic Carbon (TOC)	EPA 415.1	3.00	N/A	12.2
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	N/A	28.4
Oil and Grease	NWTPH-Dx[2]	0.250 Diesel Range	10	ND
		0.500 Heavy Oil Range		ND
pH	N/A	N/A	6-9 SU	8.2[3]
Metals:				
Arsenic	200.8	0.00100	N/A	ND
Cadmium	200.8	0.00100	N/A	ND
Chromium	200.8	0.00100	N/A	0.00170
Copper	200.8	0.00200	N/A	0.00950
Lead	200.8	0.00100	N/A	0.00160
Mercury	245.1	0.000200	N/A	ND
Nickel	200.8	0.00200	N/A	0.00350
Zinc	200.8	0.00500	N/A	0.0233

[1] Chemical analyses performed by North Creek Analytical, Beaverton, Oregon.
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2g
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 1A

Monitoring Parameter	Analytical Method	Method Reporting Limit	Benchmark	Spring Sampling Event [1] May 3, 2000
Concentrations in Milligrams per Liter (mg/L)				
General Chemistry:				
Total Suspended Solids (TSS)	EPA 160.2	5	50	13
Total Phosphorus	EPA 365.3	0.01	0.16	0.21
E. Coli	SM 9223B	1.1 Units: MPN/100ml	406 counts/100 ml	58
Biological Oxygen Demand 5 (BOD5)	EPA 405.1	4	33	ND
Oil and Grease	NWTPH-Dx[2]	0.25 Diesel Range	10	ND
		0.50 Heavy Oil Range		ND
pH	150.1	N/A	6.5-8.5 SU	7.1[3]
Metals:				
Copper	EPA 200.7	0.010	0.036	ND
Lead	EPA 239.2	0.002	0.006	ND
Zinc	EPA 200.7	0.010	0.24	0.016

[1] Chemical analyses performed by Columbia Analytical Services, Inc., Kelso, WA
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2h
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 1B

Monitoring Parameter	Analytical Method	Method Reporting Limit	Benchmark	Spring Sampling Event [1] May 3, 2000
Concentrations in Milligrams per Liter (mg/L)				
General Chemistry:				
Total Suspended Solids (TSS)	EPA 160.2	5	50	138
Total Phosphorus	EPA 365.3	0.01	0.16	0.42
E. Coli	SM 9223B	1.1 Units: MPN/100ml	406 counts/100 ml	1990 (collected 5/3/00) 313 (collected 6/26/00)
Biological Oxygen Demand 5 (BOD5)	EPA 405.1	4	33	ND
Oil and Grease	NWTPH-Dx[2]	0.25 Diesel Range	10	ND
		0.50 Heavy Oil Range		ND
pH	150.1	N/A	6.5-8.5 SU	7.1[3]
Metals:				
Copper	EPA 200.7	0.010	0.036	0.017
Lead	EPA 239.2	0.002	0.006	0.016
Zinc	EPA 200.7	0.010	0.24	0.041

[1] Chemical analyses performed by Columbia Analytical Services, Inc., Kelso, WA
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2i
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 2

Monitoring Parameter	Analytical Method	Method Reporting Limit	Benchmark	Spring Sampling Event [1] May 3, 2000
Concentrations in Milligrams per Liter (mg/L)				
General Chemistry:				
Total Suspended Solids (TSS)	EPA 160.2	5	50	13
Total Phosphorus	EPA 365.3	0.01	0.16	0.16
E. Coli	SM 9223B	1.1 Units: MPN/100ml	406 counts/100 ml	261
Biological Oxygen Demand 5 (BOD5)	EPA 405.1	4	33	6
Oil and Grease	NWTPH-Dx[2]	0.25 Diesel Range	10	ND
		0.50 Heavy Oil Range		0.660
pH	150.1	N/A	6.5-8.5 SU	7.2[3]
Metals:				
Copper	EPA 200.7	0.010	0.036	ND
Lead	EPA 239.2	0.002	0.006	0.002
Zinc	EPA 200.7	0.010	0.24	0.042

[1] Chemical analyses performed by Columbia Analytical Services, Inc., Kelso, WA
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2j
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 4

Monitoring Parameter	Analytical Method	Method Reporting Limit	Benchmark	Spring Sampling Event [1] May 3, 2000
Concentrations in Milligrams per Liter (mg/L)				
General Chemistry:				
Total Suspended Solids (TSS)	EPA 160.2	5	50	23
Total Phosphorus	EPA 365.3	0.01	0.16	0.16
E. Coli	SM 9223B	1.1 Units: MPN/100ml	406 counts/100 ml	75
Biological Oxygen Demand 5 (BOD5)	EPA 405.1	4	33	4
Oil and Grease	NWTPH-Dx[2]	0.25 Diesel Range	10	ND
		0.50 Heavy Oil Range		0.870
pH	150.1	N/A	6.5-8.5 SU	6.9[3]
Metals:				
Copper	EPA 200.7	0.010	0.036	0.012
Lead	EPA 239.2	0.002	0.006	ND
Zinc	EPA 200.7	0.010	0.24	0.056

[1] Chemical analyses performed by Columbia Analytical Services, Inc., Kelso, WA
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2k
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 5

Monitoring Parameter	Analytical Method	Method Reporting Limit	Benchmark	Spring Sampling Event [1] May 3, 2000
Concentrations in Milligrams per Liter (mg/L)				
General Chemistry:				
Total Suspended Solids (TSS)	EPA 160.2	5	50	20
Total Phosphorus	EPA 365.3	0.01	0.16	0.15
E. Coli	SM 9223B	1.1 Units: MPN/100ml	406 counts/100 ml	91
Biological Oxygen Demand 5 (BOD5)	EPA 405.1	4	33	ND
Oil and Grease	NWTPH-Dx[2]	0.25 Diesel Range	10	ND
		0.50 Heavy Oil Range		ND
pH	150.1	N/A	6.5-8.5 SU	7.2[3]
Metals:				
Copper	EPA 200.7	0.010	0.036	ND
Lead	EPA 239.2	0.002	0.006	ND
Zinc	EPA 200.7	0.010	0.24	0.017

[1] Chemical analyses performed by Columbia Analytical Services, Inc., Kelso, WA
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2I
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 6

Monitoring Parameter	Analytical Method	Method Reporting Limit	Benchmark	Spring Sampling Event [1] May 3, 2000
Concentrations in Milligrams per Liter (mg/L)				
General Chemistry:				
Total Suspended Solids (TSS)	EPA 160.2	5	50	14
Total Phosphorus	EPA 365.3	0.01	0.16	0.27
E. Coli	SM 9223B	1.1 Units: MPN/100ml	406 counts/100 ml	178
Biological Oxygen Demand 5 (BOD5)	EPA 405.1	4	33	ND
Oil and Grease	NWTPH-Dx[2]	0.25 Diesel Range	10	ND
		0.50 Heavy Oil Range		ND
pH	150.1	N/A	6.5-8.5 SU	7.0[3]
Metals:				
Copper	EPA 200.7	0.010	0.036	ND
Lead	EPA 239.2	0.002	0.006	ND
Zinc	EPA 200.7	0.010	0.24	0.018

[1] Chemical analyses performed by Columbia Analytical Services, Inc., Kelso, WA
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2m
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 7

Monitoring Parameter	Analytical Method	Method Reporting Limit	Benchmark	Spring Sampling Event [1] May 3, 2000
Concentrations in Milligrams per Liter (mg/L)				
General Chemistry:				
Total Suspended Solids (TSS)	EPA 160.2	5	50	16
Total Phosphorus	EPA 365.3	0.01	0.16	0.24
E. Coli	SM 9223B	1.1 Units: MPN/100ml	406 counts/100 ml	1120
Biological Oxygen Demand 5 (BOD5)	EPA 405.1	4	33	7
Oil and Grease	NWTPH-Dx[2]	0.25 Diesel Range	10	ND
		0.50 Heavy Oil Range		1.1
pH	150.1	N/A	6.5-8.5 SU	7.0[3]
Metals:				
Copper	EPA 200.7	0.010	0.036	0.013
Lead	EPA 239.2	0.002	0.006	ND
Zinc	EPA 200.7	0.010	0.24	0.108

[1] Chemical analyses performed by Columbia Analytical Services, Inc., Kelso, WA
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

TABLE 2n
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Monitoring Location: PDX Basin No. 8

Monitoring Parameter	Analytical Method	Method Reporting Limit	Benchmark	Spring Sampling Event [1] May 3, 2000
Concentrations in Milligrams per Liter (mg/L)				
General Chemistry:				
Total Suspended Solids (TSS)	EPA 160.2	5	50	38 (collected at 0845) * 48 (collected at 1245) *
Total Phosphorus	EPA 365.3	0.01	0.16	0.23
E. Coli	SM 9223B	1.1 Units: MPN/100ml	406 counts/100 ml	261
Biological Oxygen Demand 5 (BOD5)	EPA 405.1	4	33	4 (collected at 0845) * 8 (collected at 1245) *
Oil and Grease	NWTPH-Dx[2]	0.25 Diesel Range	10	ND
		0.50 Heavy Oil Range		ND
pH	150.1	N/A	6.5-8.5 SU	7.3[3]
Metals:				
Copper	EPA 200.7	0.010	0.036	ND
Lead	EPA 239.2	0.002	0.006	ND
Zinc	EPA 200.7	0.010	0.24	0.022

[1] Chemical analyses performed by Columbia Analytical Services, Inc., Kelso, WA
[2] NWTPH-Dx analysis conducted without organic cleanup
[3] pH measured in field using a Oakton ® pHTestr 2 meter and is reported in standard pH units.

ND = Not detected at the method reporting limit
N/A = Not applicable or not established

*Samples analyzed twice for same parameters due to miscommunication with lab

TABLE 2o
PDX 1999 – 2000 1200-COLS NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT
Reporting Period: February 11, 2000 – June 30, 2000

Port of Portland
Portland International Airport, Portland, Oregon
File No. 107220

Temperature Data

Site	Date	Benchmark	Measurement (°F)
Basin 1A	4/12/00	Report	54
Basin 1B	4/12/00	Report	71
Basin 2	4/12/00	Report	58
Basin 4	4/12/00	Report	60
Basin 5	4/12/00	Report	62
Basin 6	4/12/00	Report	61
Basin 7	4/12/00	Report	65
Basin 8	4/12/00	Report	62
Basin 9A	4/12/00	Report	56
Basin 9B	4/12/00	Report	57
Basin 1A	5/17/00	Report	55
Basin 1B	5/17/00	Report	57
Basin 2	5/17/00	Report	58
Basin 4	5/17/00	Report	59
Basin 5	5/17/00	Report	59
Basin 6	5/17/00	Report	59
Basin 7	5/17/00	Report	56
Basin 8	5/17/00	Report	57
Basin 9A	5/17/00	Report	56
Basin 9B	5/17/00	Report	58
Basin 1A	6/14/00	Report	64
Basin 1B	6/14/00	Report	59
Basin 2	6/14/00	Report	65
Basin 4	6/14/00	Report	65
Basin 5	6/14/00	Report	65
Basin 6	6/14/00	Report	69
Basin 7	6/14/00	Report	62
Basin 8	6/14/00	Report	64
Basin 9A	6/14/00	Report	62
Basin 9B	6/14/00	Report	62

TABLE 3
T-6 1999 – 2000 1200-Z NPDES STORM WATER DISCHARGE PERMIT
INDUSTRIAL STORMWATER MONITORING REPORT

		EPA		Permit	1st Sampling	2nd Sampling
T-6 Location	**Parameters**	**Method**	**MRL**	**Benchmark**	**15-Nov-99**	**8-May-00**
Manhole 1	TSS	160.2	10	130 mg/L	79 mg/L	67 mg/L
Outfall L (B605)	pH			5.5 - 9 S.U.	6.4	6.71
	Oil and Grease	413.1	5	10 mg/L	**25 mg/L**	3.7 mg/L
	Total Copper	6010A	0.005	0.1 mg/L	0.032 mg/L	0.038 mg/L
	Total Lead	7421	0.002	0.4 mg/L	0.057 mg/L	0.041 mg/L
	Total Zinc	6010A	0.01	0.6 mg/L	**0.721 mg/L**	**0.679 mg/L**
	Foam/Debris			No Visible	No Visible	No Visible
	Oil/Grease Sheen			No Visible	No Visible	Slight -None

		EPA		Permit	1st Sampling	2nd Sampling
T-6 Location	**Parameters**	**Method**	**MRL**	**Benchmark**	**15-Nov-99**	**8-May-00**
Manhole 2	TSS	160.2	10	130 mg/L	ND	43 mg/L
Outfall M (CDC)	pH			5.5 - 9 S.U.	7	6.88
	Oil and Grease	413.1	5	10 mg/L	7 mg/L	ND
	Total Copper	6010A	0.005	0.1 mg/L	0.012 mg/L	0.014 mg/L
	Total Lead	7421	0.002	0.4 mg/L	0.006 mg/L	0.005 mg/L
	Total Zinc	6010A	0.01	0.6 mg/L	0.252 mg/L	0.069 mg/L
	Foam/Debris			No Visible	No Visible	No Visible
	Oil/Grease Sheen			No Visible	No Visible	No Visible

		EPA		Permit	1st Sampling	2nd Sampling
T-6 Location	**Parameters**	**Method**	**MRL**	**Benchmark**	**15-Nov-99**	**8-May-00**
Manhole 3	TSS	160.2	10	130 mg/L	43 mg/L	104 mg/L
Outfall O (B603)	pH			5.5 - 9 S.U.	6.3	6.92
	Oil and Grease	413.1	5	10 mg/L	8 mg/L	2.22 mg/L
	Total Copper	6010A	0.005	0.1 mg/L	0.027 mg/L	0.037 mg/L
	Total Lead	7421	0.002	0.4 mg/L	0.032 mg/L	0.076 mg/L
	Total Zinc	6010A	0.01	0.6 mg/L	0.388 mg/L	0.566 mg/L
	Foam/Debris			No Visible	No Visible	No Visible
	Oil/Grease Sheen			No Visible	No Visible	No Visible

TABLE 3
T-6 1999 – 2000 1200-Z NPDES STORM WATER DISCHARGE PERMIT
INDUSTRIAL STORMWATER MONITORING REPORT (CONT.)

		EPA		Permit	1st Sampling	2nd Sampling
T-6 Location	**Parameters**	**Method**	**MRL**	**Benchmark**	**15-Nov-99**	**8-May-00**
Manhole 4	TSS	160.2	10	130 mg/L	25 mg/L	34 mg/L
Outfall K (B606)	pH			5.5 - 9 S.U.	6.2	7.09
	Oil and Grease	413.1	5	10 mg/L	9 mg/L	2.32 mg/L
	Total Copper	6010A	0.005	0.1 mg/L	0.015 mg/L	0.016 mg/L
	Total Lead	7421	0.002	0.4 mg/L	0.021 mg/L	0.018 mg/L
	Total Zinc	6010A	0.01	0.6 mg/L	0.311 mg/L	0.396 mg/L
	Foam/Debris			No Visible	No Visible	No Visible
	Oil/Grease Sheen			No Visible	No Visible	No Visible

TABLE 4
PSY 1999 – 2000 1200-Z NPDES STORM WATER DISCHARGE PERMIT
INDUSTRIAL STORMWATER MONITORING REPORT

ANALYTE	UNITS	EPA METHOD	Sample Point 1			Sample Point 2			Sample Point 3			Permit Benchmark
			12/15/99	5/9/00	5/10/00	12/15/99	5/9/00	5/10/00	12/15/99	5/9/00	5/10/00	
Chemistry												
pH	su	150.1/9040A	5.5a	7.03	6.64	5a	6.9	6.62	5a	6.9	8.09	5.5-9.0
TSS	mg/L	160.2	19	**131**	42	20	110	**132**	49	87	15	130
Oil & Grease	mg/L	413.1	6.1	5.1	ND	7.2	ND	ND	7.7	ND	ND	10
Metals												
Copper	mg/L	200.8	**0.2**	**0.785**	**0.421**	**0.25**	**1.24**	**2.14**	**0.25**	**0.821**	**0.155**	0.1
Lead	mg/L	200.8	<0.1	0.0706	0.028	<0.1	0.101	0.0695	<0.1	0.0635	0.01	0.4
Zinc	mg/L	200.8	0.56	**1.72**	**0.638**	0.55	**2.11**	**2.33**	**3.2**	**2.58**	0.463	0.6

Notes:
ND: Not detected at indicated reporting limit
mg/L: Milligrams per liter
su: Standard Units
Bold indicates results higher than benchmark
a - tested by pH strip

TABLE 5
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PDX

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PDX	Basin 1	11/9/1999	COD	19.5	0.225	0.018	1029	4.085	352983.01	9996478.98	194931340
PDX	Basin 1	11/9/1999	TSS	10	0.225	0.018	1029	4.085	352983.01	9996478.98	99964790
PDX	Basin 1	11/9/1999	Oil & Grease	ND							
PDX	Basin 1	11/9/1999	Phosphorus	0.158	0.225	0.018	1029	4.085	352983.01	9996478.98	1579444
PDX	Basin 1	11/9/1999	TOC	8.22	0.225	0.018	1029	4.085	352983.01	9996478.98	82171057
PDX	Basin 1	11/9/1999	Arsenic	0.0016	0.225	0.018	1029	4.085	352983.01	9996478.98	15994
PDX	Basin 1	11/9/1999	Cadmium	ND							
PDX	Basin 1	11/9/1999	Chromium	0.0016	0.225	0.018	1029	4.085	352983.01	9996478.98	15994
PDX	Basin 1	11/9/1999	Copper	0.004	0.225	0.018	1029	4.085	352983.01	9996478.98	39986
PDX	Basin 1	11/9/1999	Lead	ND							
PDX	Basin 1	11/9/1999	Mercury	ND							
PDX	Basin 1	11/9/1999	Nickel	0.0033	0.225	0.018	1029	4.085	352983.01	9996478.98	32988
PDX	Basin 1	11/9/1999	Zinc	0.0175	0.225	0.018	1029	4.085	352983.01	9996478.98	174938
PDX	Basin 1A	5/3/2000	BOD5	ND							
PDX	Basin 1A	5/3/2000	TSS	13	0.225	0.005	1029	1.265	109256.64	3094148.25	40223927
PDX	Basin 1A	5/3/2000	Oil & Grease	ND							
PDX	Basin 1A	5/3/2000	Phosphorus	0.21	0.225	0.005	1029	1.265	109256.64	3094148.25	649771
PDX	Basin 1A	5/3/2000	E. Coli	58	0.225	0.005	1029	1.265	109256.64	3094148.25	179460599
PDX	Basin 1A	5/3/2000	Copper	ND							
PDX	Basin 1A	5/3/2000	Lead	ND							
PDX	Basin 1A	5/3/2000	Zinc	0.016	0.225	0.005	1029	1.265	109256.64	3094148.25	49506
PDX	Basin 1B	5/3/2000	BOD5	ND							
PDX	Basin 1B	5/3/2000	TSS	138	0.225	0.005	1029	1.265	109256.64	3094148.25	426992459
PDX	Basin 1B	5/3/2000	Oil & Grease	ND							
PDX	Basin 1B	5/3/2000	Phosphorus	0.42	0.225	0.005	1029	1.265	109256.64	3094148.25	1299542
PDX	Basin 1B	5/3/2000	E. Coli	1990	0.225	0.005	1029	1.265	109256.64	3094148.25	6157355032
PDX	Basin 1B	5/3/2000	Copper	0.036	0.225	0.005	1029	1.265	109256.64	3094148.25	111389
PDX	Basin 1B	5/3/2000	Lead	0.006	0.225	0.005	1029	1.265	109256.64	3094148.25	18565
PDX	Basin 1B	5/3/2000	Zinc	0.24	0.225	0.005	1029	1.265	109256.64	3094148.25	742596

Basin 1 Outfall = MDD2

* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.

ND = Non-Detect, below laboratory detection limit.

TABLE 5
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PDX (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PDX	Basin 2	11/9/1999	COD	24.3	0.525	0.018	250	2.316	200103.75	5666938.2	137706598.3
PDX	Basin 2	11/9/1999	TSS	ND							
PDX	Basin 2	11/9/1999	Oil & Grease	ND							
PDX	Basin 2	11/9/1999	Phosphorus	0.0838	0.525	0.018	250	2.316	200103.75	5666938.2	474889.4212
PDX	Basin 2	11/9/1999	TOC	9.09	0.525	0.018	250	2.316	200103.75	5666938.2	51512468.24
PDX	Basin 2	11/9/1999	Arsenic	ND							
PDX	Basin 2	11/9/1999	Cadmium	ND							
PDX	Basin 2	11/9/1999	Chromium	0.0016	0.525	0.018	250	2.316	200103.75	5666938.2	9067.10112
PDX	Basin 2	11/9/1999	Copper	0.008	0.525	0.018	250	2.316	200103.75	5666938.2	45335.5056
PDX	Basin 2	11/9/1999	Lead	0.0024	0.525	0.018	250	2.316	200103.75	5666938.2	13600.65168
PDX	Basin 2	11/9/1999	Mercury	ND							
PDX	Basin 2	11/9/1999	Nickel	ND							
PDX	Basin 2	11/9/1999	Zinc	0.0553	0.525	0.018	250	2.316	200103.75	5666938.2	313381.6825
PDX	Basin 2	5/3/2000	BOD5	6	0.525	0.005	250	0.717	61936.875	1754052.3	10524313.8
PDX	Basin 2	5/3/2000	TSS	13	0.525	0.005	250	0.717	61936.875	1754052.3	22802679.9
PDX	Basin 2	5/3/2000	Oil & Grease	0.66	0.525	0.005	250	0.717	61936.875	1754052.3	1157674.518
PDX	Basin 2	5/3/2000	Phosphorus	0.16	0.525	0.005	250	0.717	61936.875	1754052.3	280648.368
PDX	Basin 2	5/3/2000	E. Coli	261	0.525	0.005	250	0.717	61936.875	1754052.3	457807650.3
PDX	Basin 2	5/3/2000	Copper	ND							
PDX	Basin 2	5/3/2000	Lead	0.002	0.525	0.005	250	0.717	61936.875	1754052.3	3508.1046
PDX	Basin 2	5/3/2000	Zinc	0.042	0.525	0.005	250	0.717	61936.875	1754052.3	73670.1966

Basin 2 Outfall = MDD3

* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.

ND = Non-Detect, below laboratory detection limit.

TABLE 5
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PDX (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PDX	Basin 4	11/9/1999	COD	30.5	0.525	0.018	49	0.454	39220.335	1110719.88	33876956.56
PDX	Basin 4	11/9/1999	TSS	18	0.525	0.018	49	0.454	39220.335	1110719.88	19992957.97
PDX	Basin 4	11/9/1999	Oil & Grease	ND							
PDX	Basin 4	11/9/1999	Phosphorus	0.179	0.525	0.018	49	0.454	39220.335	1110719.88	198818.8598
PDX	Basin 4	11/9/1999	TOC	11.1	0.525	0.018	49	0.454	39220.335	1110719.88	12328990.75
PDX	Basin 4	11/9/1999	Arsenic	ND							
PDX	Basin 4	11/9/1999	Cadmium	0.0014	0.525	0.018	49	0.454	39220.335	1110719.88	1555.007842
PDX	Basin 4	11/9/1999	Chromium	0.0016	0.525	0.018	49	0.454	39220.335	1110719.88	1777.15182
PDX	Basin 4	11/9/1999	Copper	0.0131	0.525	0.018	49	0.454	39220.335	1110719.88	14550.43052
PDX	Basin 4	11/9/1999	Lead	0.0032	0.525	0.018	49	0.454	39220.335	1110719.88	3554.303639
PDX	Basin 4	11/9/1999	Mercury	ND							
PDX	Basin 4	11/9/1999	Nickel	0.0029	0.525	0.018	49	0.454	39220.335	1110719.88	3221.087673
PDX	Basin 4	11/9/1999	Zinc	0.0854	0.525	0.018	49	0.454	39220.335	1110719.88	94855.47837
PDX	Basin 4	5/3/2000	BOD5	4	0.525	0.005	49	0.141	12139.627	343794.250	1375177.003
PDX	Basin 4	5/3/2000	TSS	23	0.525	0.005	49	0.141	12139.627	343794.250	7907267.768
PDX	Basin 4	5/3/2000	Oil & Grease	0.87	0.525	0.005	49	0.141	12139.627	343794.250	299100.9982
PDX	Basin 4	5/3/2000	Phosphorus	0.16	0.525	0.005	49	0.141	12139.627	343794.250	55007.08013
PDX	Basin 4	5/3/2000	E. Coli	75	0.525	0.005	49	0.141	12139.627	343794.250	25784568.81
PDX	Basin 4	5/3/2000	Copper	0.012	0.525	0.005	49	0.141	12139.627	343794.250	4125.53101
PDX	Basin 4	5/3/2000	Lead	ND							
PDX	Basin 4	5/3/2000	Zinc	0.056	0.525	0.005	49	0.141	12139.627	343794.250	19252.47804

Basin 4 Outfall = SS03PP
* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 5
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PDX (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PDX	Basin 5	5/3/2000	BOD5	ND							
PDX	Basin 5	5/3/2000	TSS	20	0.643	0.005	476	1.672	144433.4	4090356.41	8E+07
PDX	Basin 5	5/3/2000	Oil & Grease	ND							
PDX	Basin 5	5/3/2000	Phosphorus	0.15	0.643	0.005	476	1.672	144433.4	4090356.41	613553.4621
PDX	Basin 5	5/3/2000	E. Coli	91	0.643	0.005	476	1.672	144433.4	4090356.41	4E+08
PDX	Basin 5	5/3/2000	Copper	ND							
PDX	Basin 5	5/3/2000	Lead	ND							
PDX	Basin 5	5/3/2000	Zinc	0.017	0.643	0.005	476	1.672	144433.4	4090356.41	69536.05904

Basin 5 Outfall = SS12500
* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 5
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PDX (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PDX	Basin 6	11/9/1999	COD	32.9	0.643	0.018	476	5.401	466631.27	13214997.6	434773422.5
PDX	Basin 6	11/9/1999	TSS	17	0.643	0.018	476	5.401	466631.27	13214997.6	224654960
PDX	Basin 6	11/9/1999	Oil & Grease	ND							
PDX	Basin 6	11/9/1999	Phosphorus	0.512	0.643	0.018	476	5.401	466631.27	13214997.6	6766078.795
PDX	Basin 6	11/9/1999	TOC	12.4	0.643	0.018	476	5.401	466631.27	13214997.6	163865970.8
PDX	Basin 6	11/9/1999	Arsenic	0.0034	0.643	0.018	476	5.401	466631.27	13214997.6	44930.992
PDX	Basin 6	11/9/1999	Cadmium	0.0021	0.643	0.018	476	5.401	466631.27	13214997.6	27751.49506
PDX	Basin 6	11/9/1999	Chromium	0.0013	0.643	0.018	476	5.401	466631.27	13214997.6	17179.49694
PDX	Basin 6	11/9/1999	Copper	0.0104	0.643	0.018	476	5.401	466631.27	13214997.6	137435.9755
PDX	Basin 6	11/9/1999	Lead	0.0017	0.643	0.018	476	5.401	466631.27	13214997.6	22465.496
PDX	Basin 6	11/9/1999	Mercury	ND							
PDX	Basin 6	11/9/1999	Nickel	0.0049	0.643	0.018	476	5.401	466631.27	13214997.6	64753.48846
PDX	Basin 6	11/9/1999	Zinc	0.0399	0.643	0.018	476	5.401	466631.27	13214997.6	527278.4061
PDX	Basin 6	5/3/2000	BOD5	ND							
PDX	Basin 6	5/3/2000	TSS	14	0.643	0.005	476	1.672	144433.48	4090356.41	6E+07
PDX	Basin 6	5/3/2000	Oil & Grease	ND							
PDX	Basin 6	5/3/2000	Phosphorus	0.27	0.643	0.005	476	1.672	144433.48	4090356.41	1104396.232
PDX	Basin 6	5/3/2000	E. Coli	178	0.643	0.005	476	1.672	144433.48	4090356.41	7E+08
PDX	Basin 6	5/3/2000	Copper	ND							
PDX	Basin 6	5/3/2000	Lead	ND							
PDX	Basin 6	5/3/2000	Zinc	0.018	0.643	0.005	476	1.672	144433.48	4090356.41	73626.41545

Basin 6 Outfall = POPE1

* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.

ND = Non-Detect, below laboratory detection limit.

TABLE 5
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PDX (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PDX	Basin 7	11/9/1999	COD	31.5	0.6	0.018	725	7.676	663201	18781852.3	591628348.1
PDX	Basin 7	11/9/1999	TSS	35	0.6	0.018	725	7.676	663201	18781852.3	657364831.2
PDX	Basin 7	11/9/1999	Oil & Grease	ND							
PDX	Basin 7	11/9/1999	Phosphorus	0.34	0.6	0.018	725	7.676	663201	18781852.3	6385829.7
PDX	Basin 7	11/9/1999	TOC	11.6	0.6	0.018	725	7.676	663201	18781852.3	217869486.9
PDX	Basin 7	11/9/1999	Arsenic	0.0014	0.6	0.018	725	7.676	663201	18781852.3	26294.59
PDX	Basin 7	11/9/1999	Cadmium	0.0014	0.6	0.018	725	7.676	663201	18781852.3	26294.59
PDX	Basin 7	11/9/1999	Chromium	0.0023	0.6	0.018	725	7.676	663201	18781852.3	43198.26
PDX	Basin 7	11/9/1999	Copper	0.014	0.6	0.018	725	7.676	663201	18781852.3	262945.9
PDX	Basin 7	11/9/1999	Lead	0.0051	0.6	0.018	725	7.676	663201	18781852.3	95787.44
PDX	Basin 7	11/9/1999	Mercury	ND							
PDX	Basin 7	11/9/1999	Nickel	0.0036	0.6	0.018	725	7.676	663201	18781852.3	67614.66
PDX	Basin 7	11/9/1999	Zinc	0.131	0.6	0.018	725	7.676	663201	18781852.3	2460422.6
PDX	Basin 7	5/3/2000	BOD5	7	0.6	0.005	725	2.376	205276.5	5813430.4	40694013.3
PDX	Basin 7	5/3/2000	TSS	16	0.6	0.005	725	2.376	205276.5	5813430.4	93014887.6
PDX	Basin 7	5/3/2000	Oil & Grease	1.1	0.6	0.005	725	2.376	205276.5	5813430.4	6394773.5
PDX	Basin 7	5/3/2000	Phosphorus	0.24	0.6	0.005	725	2.376	205276.5	5813430.4	1395223.3
PDX	Basin 7	5/3/2000	E. Coli	1120	0.6	0.005	725	2.376	205276.5	5813430.4	65110421
PDX	Basin 7	5/3/2000	Copper	0.013	0.6	0.005	725	2.376	205276.5	5813430.4	75574.59
PDX	Basin 7	5/3/2000	Lead	ND							
PDX	Basin 7	5/3/2000	Zinc	0.108	0.6	0.005	725	2.376	205276.5	5813430.4	627850.4

Basin 7 Outfall = MDD6, SS12200
* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 5
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PDX (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PDX	Basin 8	11/9/1999	COD	28.4	0.297	0.018	679	3.559	307455.40	8707137.20	247282696.6
PDX	Basin 8	11/9/1999	TSS	35	0.297	0.018	679	3.559	307455.40	8707137.20	304749802.2
PDX	Basin 8	11/9/1999	Oil & Grease	ND							
PDX	Basin 8	11/9/1999	Phosphorus	0.228	0.297	0.018	679	3.559	307455.40	8707137.20	1985227.283
PDX	Basin 8	11/9/1999	TOC	12.2	0.297	0.018	679	3.559	307455.40	8707137.20	106227073.9
PDX	Basin 8	11/9/1999	Arsenic	ND							
PDX	Basin 8	11/9/1999	Cadmium	ND							
PDX	Basin 8	11/9/1999	Chromium	0.0017	0.297	0.018	679	3.559	307455.40	8707137.20	14802.13325
PDX	Basin 8	11/9/1999	Copper	0.0095	0.297	0.018	679	3.559	307455.40	8707137.20	82717.80345
PDX	Basin 8	11/9/1999	Lead	0.0016	0.297	0.018	679	3.559	307455.40	8707137.20	13931.41953
PDX	Basin 8	11/9/1999	Mercury	ND							
PDX	Basin 8	11/9/1999	Nickel	0.0035	0.297	0.018	679	3.559	307455.40	8707137.20	30474.98022
PDX	Basin 8	11/9/1999	Zinc	0.0233	0.297	0.018	679	3.559	307455.40	8707137.20	202876.2969
PDX	Basin 8	5/3/2000	BOD5	8	0.297	0.005	679	1.101	95164.769	2695066.27	21560530.22
PDX	Basin 8	5/3/2000	TSS	48	0.297	0.005	679	1.101	95164.769	2695066.27	129363181.3
PDX	Basin 8	5/3/2000	Oil & Grease	ND							
PDX	Basin 8	5/3/2000	Phosphorus	0.23	0.297	0.005	679	1.101	95164.769	2695066.27	619865.2439
PDX	Basin 8	5/3/2000	E. Coli	261	0.297	0.005	679	1.101	95164.769	2695066.27	703412298.5
PDX	Basin 8	5/3/2000	Copper	0.036	0.297	0.005	679	1.101	95164.769	2695066.27	97022.386
PDX	Basin 8	5/3/2000	Lead	0.006	0.297	0.005	679	1.101	95164.769	2695066.27	16170.39767
PDX	Basin 8	5/3/2000	Zinc	0.24	0.297	0.005	679	1.101	95164.769	2695066.27	646815.9067

Basin 8 Outfall = SS12000
* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 6
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PSY

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PSY	Basin 2	12/15/1999	TSS	19.000	0.9	0.013	5.8	0.07	5714	161820	3074580
PSY	Basin 2	12/15/1999	Oil & Grease	6.100	0.9	0.013	5.8	0.07	5714	161820	987102
PSY	Basin 2	12/15/1999	Copper	0.200	0.9	0.013	5.8	0.07	5714	161820	32364
PSY	Basin 2	12/15/1999	Lead	0.100	0.9	0.013	5.8	0.07	5714	161820	16182
PSY	Basin 2	12/15/1999	Zinc	0.560	0.9	0.013	5.8	0.07	5714	161820	90619
PSY	Basin 2	5/9/2000	TSS	131.000	0.9	0.016	5.8	0.09	7428	210366	27557946
PSY	Basin 2	5/9/2000	Oil & Grease	5.100	0.9	0.016	5.8	0.09	7428	210366	1072867
PSY	Basin 2	5/9/2000	Copper	0.785	0.9	0.016	5.8	0.09	7428	210366	165137
PSY	Basin 2	5/9/2000	Lead	0.071	0.9	0.016	5.8	0.09	7428	210366	14852
PSY	Basin 2	5/9/2000	Zinc	1.720	0.9	0.016	5.8	0.09	7428	210366	361830
PSY	Basin 2	5/10/2000	TSS	42.000	0.9	0.027	5.8	0.14	12190	345216	14499072
PSY	Basin 2	5/10/2000	Oil & Grease	ND							
PSY	Basin 2	5/10/2000	Copper	0.421	0.9	0.027	5.8	0.14	12190	345216	145336
PSY	Basin 2	5/10/2000	Lead	0.028	0.9	0.027	5.8	0.14	12190	345216	9666
PSY	Basin 2	5/10/2000	Zinc	0.638	0.9	0.027	5.8	0.14	12190	345216	220248

* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 6
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PSY (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PSY	Basin 9	12/15/1999	TSS	20.000	0.9	0.013	1.51	0.017	1480	41912	838244
PSY	Basin 9	12/15/1999	Oil & Grease	7.200	0.9	0.013	1.51	0.017	1480	41912	301768
PSY	Basin 9	12/15/1999	Copper	0.250	0.9	0.013	1.51	0.017	1480	41912	10478
PSY	Basin 9	12/15/1999	Lead	0.100	0.9	0.013	1.51	0.017	1480	41912	4191
PSY	Basin 9	12/15/1999	Zinc	0.550	0.9	0.013	1.51	0.017	1480	41912	23052
PSY	Basin 9	5/9/2000	TSS	110.000	0.9	0.016	1.51	0.022	1924	54486	5993446
PSY	Basin 9	5/9/2000	Oil & Grease	ND							
PSY	Basin 9	5/9/2000	Copper	1.240	0.9	0.016	1.51	0.022	1924	54486	67562
PSY	Basin 9	5/9/2000	Lead	0.101	0.9	0.016	1.51	0.022	1924	54486	5503
PSY	Basin 9	5/9/2000	Zinc	2.110	0.9	0.016	1.51	0.022	1924	54486	114965
PSY	Basin 9	5/10/2000	TSS	132.000	0.9	0.027	1.51	0.037	3157	89413	11802479
PSY	Basin 9	5/10/2000	Oil & Grease	ND							
PSY	Basin 9	5/10/2000	Copper	2.140	0.9	0.027	1.51	0.037	3157	89413	191343
PSY	Basin 9	5/10/2000	Lead	0.070	0.9	0.027	1.51	0.037	3157	89413	6214
PSY	Basin 9	5/10/2000	Zinc	2.330	0.9	0.027	1.51	0.037	3157	89413	208332

* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 6
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR PSY (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
PSY	Basin 12	12/15/1999	TSS	4.900	0.9	0.013	9.3	0.105	9066	256747	1258060
PSY	Basin 12	12/15/1999	Oil & Grease	7.700	0.9	0.013	9.3	0.105	9066	256747	1976952
PSY	Basin 12	12/15/1999	Copper	0.250	0.9	0.013	9.3	0.105	9066	256747	64187
PSY	Basin 12	12/15/1999	Lead	0.100	0.9	0.013	9.3	0.105	9066	256747	25675
PSY	Basin 12	12/15/1999	Zinc	3.200	0.9	0.013	9.3	0.105	9066	256747	821590
PSY	Basin 12	5/9/2000	TSS	87.000	0.9	0.016	9.3	0.136	11786	333771	29038085
PSY	Basin 12	5/9/2000	Oil & Grease	ND							
PSY	Basin 12	5/9/2000	Copper	0.821	0.9	0.016	9.3	0.136	11786	333771	274026
PSY	Basin 12	5/9/2000	Lead	0.064	0.9	0.016	9.3	0.136	11786	333771	21194
PSY	Basin 12	5/9/2000	Zinc	2.580	0.9	0.016	9.3	0.136	11786	333771	861129
PSY	Basin 12	5/10/2000	TSS	15.000	0.9	0.027	9.3	0.224	19341	547727	8215904
PSY	Basin 12	5/10/2000	Oil & Grease	ND							
PSY	Basin 12	5/10/2000	Copper	0.155	0.9	0.027	9.3	0.224	19341	547727	84898
PSY	Basin 12	5/10/2000	Lead	0.010	0.9	0.027	9.3	0.224	19341	547727	5477
PSY	Basin 12	5/10/2000	Zinc	0.463	0.9	0.027	9.3	0.224	19341	547727	253598

* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 7
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR T-6

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
T-6	Manhole 1	11/15/1999	TSS	79.000	0.9	0.003	60.3	0.137	11820.006	334742.569	26444663.0
T-6	Manhole 1	11/15/1999	Oil & Grease	25.000	0.9	0.003	60.3	0.137	11820.006	334742.569	8368564.2
T-6	Manhole 1	11/15/1999	Copper	0.032	0.9	0.003	60.3	0.137	11820.006	334742.569	10711.762
T-6	Manhole 1	11/15/1999	Lead	0.057	0.9	0.003	60.3	0.137	11820.006	334742.569	19080.326
T-6	Manhole 1	11/15/1999	Zinc	0.721	0.9	0.003	60.3	0.137	11820.006	334742.569	241349.39
T-6	Manhole 1	5/8/2000	TSS	67.000	0.9	0.005	60.3	0.296	25610.013	725275.568	48593463.0
T-6	Manhole 1	5/8/2000	Oil & Grease	3.700	0.9	0.005	60.3	0.296	25610.013	725275.568	2683519.6
T-6	Manhole 1	5/8/2000	Copper	0.038	0.9	0.005	60.3	0.296	25610.013	725275.568	27560.471
T-6	Manhole 1	5/8/2000	Lead	0.041	0.9	0.005	60.3	0.296	25610.013	725275.568	29736.298
T-6	Manhole 1	5/8/2000	Zinc	0.679	0.9	0.005	60.3	0.296	25610.013	725275.568	492462.11
T-6	Manhole 2	11/15/1999	TSS	ND							
T-6	Manhole 2	11/15/1999	Oil & Grease	7.000	0.9	0.003	60.3	0.137	11820.006	334742.569	2343197.9
T-6	Manhole 2	11/15/1999	Copper	0.012	0.9	0.003	60.3	0.137	11820.006	334742.569	4016.9108
T-6	Manhole 2	11/15/1999	Lead	0.006	0.9	0.003	60.3	0.137	11820.006	334742.569	2008.4554
T-6	Manhole 2	11/15/1999	Zinc	0.252	0.9	0.003	60.3	0.137	11820.006	334742.569	84355.127
T-6	Manhole 2	5/8/2000	TSS	43.000	0.9	0.005	60.3	0.296	25610.013	725275.568	31186849.4
T-6	Manhole 2	5/8/2000	Oil & Grease	ND							
T-6	Manhole 2	5/8/2000	Copper	0.014	0.9	0.005	60.3	0.296	25610.013	725275.568	10153.857
T-6	Manhole 2	5/8/2000	Lead	0.005	0.9	0.005	60.3	0.296	25610.013	725275.568	3626.3778
T-6	Manhole 2	5/8/2000	Zinc	0.069	0.9	0.005	60.3	0.296	25610.013	725275.568	50044.014

* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 7
INDUSTRIAL STORMWATER MONITORING POLLUTANT LOAD ESTIMATE FOR T-6 (CONT.)

LOAD CALCULATIONS BASED ON Q=CIA

Location	Outfall	Date	Pollutant	Amount (mg/l)	Runoff Co-efficient C	Intensity I (in./hr.)	Area* A (acres)	Runoff Quantity Q (cu. ft./sec.)	Cubic Feet	Volume (liters)	Load (mg)
T-6	Manhole 3	11/15/1999	TSS	43.000	0.9	0.003	60.3	0.137	11820.006	334742.569	14393930.5
T-6	Manhole 3	11/15/1999	Oil & Grease	8.000	0.9	0.003	60.3	0.137	11820.006	334742.569	2677940.5
T-6	Manhole 3	11/15/1999	Copper	0.027	0.9	0.003	60.3	0.137	11820.006	334742.569	9038.0493
T-6	Manhole 3	11/15/1999	Lead	0.032	0.9	0.003	60.3	0.137	11820.006	334742.569	10711.762
T-6	Manhole 3	11/15/1999	Zinc	0.388	0.9	0.003	60.3	0.137	11820.006	334742.569	129880.11
T-6	Manhole 3	5/8/2000	TSS	104.000	0.9	0.005	60.3	0.296	25610.013	725275.568	75428659.0
T-6	Manhole 3	5/8/2000	Oil & Grease	2.220	0.9	0.005	60.3	0.296	25610.013	725275.568	1610111.7
T-6	Manhole 3	5/8/2000	Copper	0.037	0.9	0.005	60.3	0.296	25610.013	725275.568	26835.196
T-6	Manhole 3	5/8/2000	Lead	0.076	0.9	0.005	60.3	0.296	25610.013	725275.568	55120.943
T-6	Manhole 3	5/8/2000	Zinc	0.566	0.9	0.005	60.3	0.296	25610.013	725275.568	410505.97
T-6	Manhole 4	11/15/1999	TSS	25.000	0.9	0.003	45	0.102	8820.9	249807.888	6245197.2
T-6	Manhole 4	11/15/1999	Oil & Grease	9.000	0.9	0.003	45	0.102	8820.9	249807.888	2248270.9
T-6	Manhole 4	11/15/1999	Copper	0.015	0.9	0.003	45	0.102	8820.9	249807.888	3747.1183
T-6	Manhole 4	11/15/1999	Lead	0.021	0.9	0.003	45	0.102	8820.9	249807.888	5245.9656
T-6	Manhole 4	11/15/1999	Zinc	0.311	0.9	0.003	45	0.102	8820.9	249807.888	77690.253
T-6	Manhole 4	5/8/2000	TSS	34.000	0.9	0.005	45	0.221	19111.95	541250.424	18402514.4
T-6	Manhole 4	5/8/2000	Oil & Grease	2.320	0.9	0.005	45	0.221	19111.95	541250.424	1255700.9
T-6	Manhole 4	5/8/2000	Copper	0.016	0.9	0.005	45	0.221	19111.95	541250.424	8660.0067
T-6	Manhole 4	5/8/2000	Lead	0.018	0.9	0.005	45	0.221	19111.95	541250.424	9742.5076
T-6	Manhole 4	5/8/2000	Zinc	0.396	0.9	0.005	45	0.221	19111.95	541250.424	214335.16

* Rational Method is not recommended for areas over 100 acres. Accuracy decreases as area increases over 100 acres.
ND = Non-Detect, below laboratory detection limit.

TABLE 8
DRY SEASON STORMWATER OUTFALL INSPECTION SCHEDULE

OPERATING AREA	OUTFALL	LOCATION	PRIORITY OUTFALL	1997	1998	1999	2000
PDX	SS12000	NE 92nd, west of bridge, north side of slough		X			X
PDX	SS12500	NE 55th & Comfoot, PDX			X		
PDX	SS12200	NE Alderwood, PDX	X				
PDX	SS04PP	NE 47th & Comfoot				X	
PDX	SS6300	Carl Street, PDX			X		
PDX	SS03PP	West of Airtrans and Comfoot, PDX		X			X
Marine, T-1	WW43PP	Near House 106, T-1 S		X			
Marine, T-1	WW48PP	Berth 101, T-1 N			X		
Marine, T-1	WW46PP	Berth 104, T-1				X	
Marine, T-1	WW41PP	E corner of T-1 S					X
Marine, T-1	WW42PP	Berth 106, T-1 S			X		
Marine, T-1	WW45PP	Between Berths 104 & 105, T-1 S				X	
Marine, T-1	WW47PP	Berth 102, T-1 N		X		X	
Marine, T-2	BC50PP	N of Warehouse 203, T-2 N			X		X
Marine, T-2	BC54PP	Between Berths 204 & 205, T-2 S	X				
Marine, T-4	SJ25PP	Berth 415, T-4		X			
Marine, T-4	SJ23PP	N of Berth 415, T-4			X		
Marine, T-4	SJ27PP	Berth 416, T-4				X	
Marine, T-4	SJ15PP	Berth 405, under pier	X				
Marine, T-4	SJ19PP	Berth 411, Pier 2, Berth 410, T-4	X				
Marine, T-4	SJ20PP	Beth 411, T-4, under pier		X			
Marine, T-4	SJ13PP	Berth 401, T-4			X		
Marine, T-4	SJ26PP	Berth 416, T-4				X	
Marine, T-4	SJ24PP	Berth 414, T-4					X
Marine, T-4	SJ17PP	S of Berth 405, T-4		X			
Marine, T-4	SJ21PP	Berth 411, T-4			X		
Marine, T-4	SJ22PP	Berth 414 N, T-4				X	
Marine, T-4	SJ18PP	S of Berth 405, T-4, under pier					X
Marine, T-4	SJ14PP	Between Berths 401 & 403		X			
Marine, T-4	SJ28PP	South Lot, Berth 416				X	

TABLE 8
DRY SEASON STORMWATER OUTFALL INSPECTION SCHEDULE (CONT.)

OPERATING AREA	OUTFALL	LOCATION	PRIORITY OUTFALL	1997	1998	1999	2000
Marine, T-5	RG11PP	N end of Columbia Grain, T-5					X
Marine, T-5	RG04PP	1st Outfall, E end of T-5	X				
Marine, T-5	RG12PP	200 yds. S of RG11pp, T-5 Columbia Grain	X				
Marine, T-5	RG13PP	Port Bulk Facility, under dock, T-5, 300 yds. S of Alcatel	X				
Marine, T-5	RG12.5PP	T-5 Alcatel Property, NW of parking lot		X			
Marine, T-6	RG07PP	1st Pier, 300 yds. E of T-6			X		
Marine, T-6	RG04PP	1st Outfall, E end of T-6	X				
Marine, T-6	RG08PP	NW end of pier, T-6				X	
Marine, T-6	RG10PP	T-6 Kelly Point Boat Ramp, Hyundai					X
Marine, T-6	RG05PP	800 yds. E of T-6		X			
Marine, T-6	RG09PP	W of Pier at berth 601 next to Kelly Point Park			X		
Marine, T-6	RG06PP	450 yds. E of T-6				X	
Marine, T-6	RG07.5PP	NE end of Pier, T-6					X
Properties	RG15PP	30" outfall north of Western Transportation		X			
Properties	RG16PP	30" outfall south of Western Transportation		X			
Properties	RG17PP	30" outfall ½ way between Rivergate Blvd & N. Lombard		X			
Properties	RG18PP	60" outfall N. Lombard and Columbia Slough		X			
Properties	SJ45PP	Ports O'Call, Swan Island			X		
Properties	SE53PP	NW Front and Doane				X	
Properties	SJ43PP	Freightliner, Swan Island					X
Properties	SJ44PP	Ports O'Call, Swan Island, under bridge			X		
Properties	WW44PP	Berth 105, T-1 S				X	
Properties	WW77UN	T-1, North of warehouse 5					X
PSY	SJ26UN	Between B.79 & B.91, Berth 304		X			
PSY	SJ37PP	East of B.60			X		
PSY	SJ23UN	Berth 303, B.50				X	
PSY	SJ41PP	Berth 314, B.134					X
PSY	SJ30UN	Berth 303, p 38 & 39		X			
PSY	SJ31UN	Between B.118 & B.119, berth 305			X		
PSY	SJ25UN	B.91, berth 304				X	
PSY	SJ31.5UN	B.111					X
PSY	SJ36PP	East of B.50		X			

TABLE 8
DRY SEASON STORMWATER OUTFALL INSPECTION SCHEDULE (CONT.)

OPERATING AREA	OUTFALL	LOCATION	PRIORITY OUTFALL	1997	1998	1999	2000
PSY	SJ42PP	N. Channel & N. Dolphin			X		
PSY	SJ28PP	B.131 & B.132				X	
PSY	SJ35PP	Beth 301, B.1	X				
PSY	SJ39PP	Berth 313	X				
PSY	SJ33PP	Berth 303, p 33					X
PSY	SJ34PP	Berth 302/303, B.4		X			
PSY	SJ29UN	B.130			X		
PSY	SJ24UN	Berth 304, B.79				X	
PSY	SJ27UN	Berth 303/304, between B.55 & B.79					X
PSY	SJ38PP	E of Ballast Water Facility		X			

TABLE 9
1999 / 2000 DRY SEASON STORMWATER OUTFALL INSPECTION OBSERVATIONS

OUTFALL	LOCATION	DATE	FLOW	ODOR	COLOR	CLARITY	FLOATABLES	DEPOSITS/ STAINS	STRUCTURAL CONDITION	VEGETATION CONDITION
RG15PP	North of Fort James and open channel to Willamette	9/3/99	Yes	None	Yellow	Slightly Turbid	Oily Sheen	Rust	Normal	Normal
RG17PP	Between Rivergate Blvd. And Lombard	9/3/99	No	None	None	None	None	None	Normal	Normal
RG18PP	N. Lombard and Columbia Slough	9/3/99	Yes	Sewag e	Clear	Slightly Turbid	Oily Sheen	Sediments	Normal	Normal
SJ43PP	Freightliner, Swan Island	9/3/99	No	None	None	None	None	None	Normal	Normal
SJ44PP	Port O'Call, Swan Island, under bridge	9/3/99	No	None	None	None	None	None	Normal	Normal
SJ45PP	Port O'Call, Swan Island	9/3/99	No	None	None	None	None	None	Normal	Normal
SJ46PP	Boise Cascade bldg., Swan Island	9/3/99	No	None	None	None	None	None	Normal	Normal
SJ47PP	Boise Cascade bldg., Swan Island	9/3/99	No	None	None	None	None	None	Normal	Normal
WW44PP	Berth 105, T-1 S.	9/3/99	No	None	None	None	None	None	Normal	Normal
	PDX Basin 1	8/20/99	Yes	---	Brown	Cloudy	None	None	Normal	Excessive Growth
	PDX Basin 2	8/20/99	No	Musty	Green Gray	Cloudy	Algae	None	Normal	Excessive Growth
SS04PP	PDX Basin 3	8/20/99	No	None	None	None	None	None	Normal	None
SS03PP	PDX Basin 4	8/20/99	Yes	None	Clear	Clear	None	None	Normal	Excessive Growth

TABLE 9
1999 / 2000 DRY SEASON STORMWATER OUTFALL INSPECTION OBSERVATIONS (CONT.)

OUTFALL	LOCATION	DATE	FLOW	ODOR	COLOR	CLARITY	FLOATABLES	DEPOSITS/ STAINS	STRUCTURAL CONDITION	VEGETATION CONDITION
SS12500	PDX Basin 5	8/20/99	Yes	None	Brown	Cloudy	Duckweed	Garbage	Normal	Normal
POPE 1	PDX Basin 6	8/20/99	No	None	Green	Slightly Turbid	Algae	None	Normal	Excessive Growth
	PDX Basin 7	8/20/99	No	Musty	Yellow-Brown	Cloudy	Algae	None	Normal	Normal
SS12000	PDX Basin 8	8/20/99	Yes	None	Clear Green	Clear	None	None	Minor Concrete Cracking	Excessive Growth
	PDX Basin 9	8/20/99	Yes	None	Clear Green	Clear	Clear	None	Normal	Normal
WW41PP	T-1	8/24/99	N/A	N/A	N/A	N/A	N/A	N/A	Could not be located	N/A
WW47PP	T-1,Berth 102	8/24/99	No	None	None	None	None	None	Normal	Normal
BC50PP	T-2, Berth 203	8/24/99	No	None	None	None	None	None	Normal	Normal
SJ25PP	T-4, Berths 415 & 416	8/24/99	No	None	None	None	None	None	Normal	Normal
SJ19PP	T-4, Slip 2, Berth 410	8/24/99	No	None	None	None	None	None	Normal	Normal
SJ26PP	T-4, Berth 416	8/24/99	No	None	None	None	None	None	Normal	Normal
SJ22PP	T-4, Berth 412	8/24/99	No	None	None	None	None	None	Normal	Normal
SJ28PP	T-4	8/24/99	N/A	N/A	N/A	N/A	N/A	N/A	Could not be located	N/A
RG13PP	T-5	8/25/99	Yes	None	Clear	Clear	None	None	Groundwater seepage into manhole	Normal
RG12PP	T-5	8/25/99	No	None	None	None	None	None	Normal	Normal
RG04PP	T-6, Honda	8/25/99	No	None	None	None	None	None	Normal	Normal
RG08PP	T-6, Berth 603	8/25/99	No	None	None	None	None	None	Normal	Normal

TABLE 10
1999 / 2000 DRY SEASON STORMWATER SAMPLING RESULTS

OUTFALL	DATE SAMPLED	pH	TEMP (°C)	SPECIFIC CONDUCTANCE (ms/cm)	FECAL COLIFORM (MPN/100 mls)	RESIDUAL CHLORINE (mg/L)	COD (mg/L)	OIL & GREASE (mg/L)	MBAS (mg/L)	TSS (mg/L)	NITRATE (mg/L)	TOTAL PHENOLS (mg/L)
RG15PP	9/8/99	7.86	17.2	321	2.00	ND	13.2	ND	ND	13.0	ND	ND
RG18PP	9/8/99	6.50	14.4	409	1600	ND	107	ND	0.780	354	0.156	ND
SS12500	8/20/99	NA	NA	NA	NA	NA	NA	NA	NA	15	NA	NA

ND = Not Detected
NA = Not Analyzed

TABLE 11

STORMWATER MONITORING RESULTS

BMP EFFECTIVENESS MONITORING
STORMCEPTOR AT PIC
SAMPLE DATE: NOVEMBER 16, 1999

INFLOW

PARAMETER	SAMPLE #1 LABEL	SAMPLE #2 LABEL	1200 COLS BENCHMARKS (mg/L)	METHOD REPORTING LIMIT (mg/L)	SAMPLE #1 CONC. (mg/L)	SAMPLE #2 CONC. (mg/L)	AVERAGE CONC. (mg/L)
TSS	TSOP-1-IN	TSOP-2-IN	50	5	5.0000	5.0000	5.0000
Oil and Grease, HEM	OG-1-IN	OG-2-IN	10	5	ND	ND	N/A
Total Phosphorus	TPCOD-1-IN	TPCOD-2-IN	0.16	0.01	0.0300	0.0300	0.0300
Orthophosphate	TSOP-1-IN	TSOP-2-IN	N/A	0.01	0.0400	0.0400	0.0400
COD	TPCOD-1-IN	TPCOD-2-IN	N/A	15	ND	ND	N/A
BOD5	BOD-1-IN	BOD-2-IN	33	2.0	2.0000	2.1000	2.0500
Total Lead	TMH-1-IN	TMH-2-IN	0.006	0.0010	ND	ND	N/A
Total Copper	TMH-1-IN	TMH-2-IN	0.036	0.0020	0.0037	0.0042	0.0040
Total Zinc	TMH-1-IN	TMH-2-IN	0.24	0.010	0.0410	0.0450	0.0430
Dissolved Lead	DM-1-IN	DM-2-IN	N/A	0.0010	ND	ND	N/A
Dissolved Copper	DM-1-IN	DM-2-IN	N/A	0.0020	ND	ND	N/A
Dissolved Zinc	DM-1-IN	DM-2-IN	N/A	0.010	0.0250	0.0300	0.0275
Hardness	TMH-1-IN	TMH-2-IN	N/A	0.40	8.1200	7.8100	7.9650
E. coli *	EC-1-IN	EC-2-IN	406 (MPN/100 mL)	N/A	4.0000	27.0000	15.5000

OUTFLOW

PARAMETER	SAMPLE #1 LABEL	SAMPLE #2 LABEL	1200 COLS BENCHMARKS (mg/L)	METHOD REPORTING LIMIT (mg/L)	SAMPLE #1 CONC. (mg/L)	SAMPLE #2 CONC. (mg/L)	AVERAGE CONC. (mg/L)
TSS	TSOP-1-OUT	TSOP-2-OUT	50	5	5.0000	10.0000	7.5000
Oil and Grease, HEM	OG-1-OUT	OG-2-OUT	10	5	ND	ND	N/A
Total Phosphorus	TPCOD-1-OUT	TPCOD-2-OUT	0.16	0.01	0.0400	0.0200	0.0300
Orthophosphate	TSOP-1-OUT	TSOP-2-OUT	N/A	0.01	0.0400	0.0400	0.0400
COD	TPCOD-1-OUT	TPCOD-2-OUT	N/A	15	ND	ND	N/A
BOD5	BOD-1-OUT	BOD-2-OUT	33	2.0	2.0000	3.2000	2.6000
Total Lead	TMH-1-OUT	TMH-2-OUT	0.006	0.0010	ND	ND	N/A
Total Copper	TMH-1-OUT	TMH-2-OUT	0.036	0.0020	0.0046	0.0042	0.0044
Total Zinc	TMH-1-OUT	TMH-2-OUT	0.24	0.010	0.0390	0.0410	0.0400
Dissolved Lead	DM-1-OUT	DM-2-OUT	N/A	0.0010	ND	ND	N/A
Dissolved Copper ~	DM-1-OUT	DM-2-OUT	N/A	0.0020	ND	0.0026	0.0023
Dissolved Zinc	DM-1-OUT	DM-2-OUT	N/A	0.010	0.0220	0.0250	0.0235
Hardness	TMH-1-OUT	TMH-2-OUT	N/A	0.40	9.6900	9.7400	9.7150
E. coli *	EC-1-OUT	EC-2-OUT	406 (MPN/100 mL)	N/A	4.0000	12.0000	8.0000

~ = The Method Reporting Limit has been substituted for results listed as ND for analysis purposes
* E. coli reported in units of most probable number per 100 mL (MPN/100 mL)
ND = Analytical result was below the Method Reporting Limit
N/A = Not applicable

TABLE 12

STORMWATER MONITORING RESULTS

BMP EFFECTIVENESS MONITORING
STORMCEPTOR AT PIC
SAMPLE DATE: MAY 10, 2000

INFLOW

PARAMETER	SAMPLE #1 LABEL	SAMPLE #2 LABEL	1200 COLS BENCHMARKS (mg/L)	METHOD REPORTING LIMIT (mg/L)	SAMPLE #1 CONC. (mg/L)	SAMPLE #2 CONC. (mg/L)	AVERAGE CONC. (mg/L)
TSS	TSOP-1-IN	TSOP-2-IN	50	5	10.0000	5.0000	7.5000
Oil and Grease	OG-1-IN	OG-2-IN	10	5	ND	ND	N/A
Total Phosphorus	TPCOD-1-IN	TPCOD-2-IN	0.16	0.01	0.0400	0.0300	0.0350
BOD5	BOD-1-IN	BOD-2-IN	33	2.0	4.3000	4.1000	4.2000
Total Lead	TMH-1-IN	TMH-2-IN	0.006	0.0010	ND	ND	N/A
Total Copper	TMH-1-IN	TMH-2-IN	0.036	0.0020	0.0070	0.0074	0.0072
Total Zinc	TMH-1-IN	TMH-2-IN	0.24	0.010	0.0860	0.0910	0.0885
Hardness	TMH-1-IN	TMH-2-IN	N/A	0.40	12.4000	13.5000	12.9500
E. Coli *	EC-1-IN	EC-2-IN	406 (MPN/100 mL)	N/A	4.0000	9.0000	6.5000

OUTFLOW

PARAMETER	SAMPLE #1 LABEL	SAMPLE #2 LABEL	1200 COLS BENCHMARKS (mg/L)	METHOD REPORTING LIMIT (mg/L)	SAMPLE #1 CONC. (mg/L)	SAMPLE #2 CONC. (mg/L)	AVERAGE CONC. (mg/L)
TSS	TSOP-1-OUT	TSOP-2-OUT	50	5	ND	ND	N/A
Oil and Grease ~	OG-1-OUT	OG-2-OUT	10	5	7.0000	ND	6.0000
Total Phosphorus	TPCOD-1-OUT	TPCOD-2-OUT	0.16	0.01	0.0200	0.0200	0.0200
BOD5	BOD-1-OUT	BOD-2-OUT	33	2.0	3.2000	3.2000	3.2000
Total Lead ~	TMH-1-OUT	TMH-2-OUT	0.006	0.0010	ND	0.0015	0.0013
Total Copper	TMH-1-OUT	TMH-2-OUT	0.036	0.0020	0.0069	0.0071	0.0070
Total Zinc	TMH-1-OUT	TMH-2-OUT	0.24	0.010	0.0940	0.0970	0.0955
Hardness	TMH-1-OUT	TMH-2-OUT	N/A	0.40	16.9000	17.0000	16.9500
E. Coli *	EC-1-OUT	EC-2-OUT	406 (MPN/100 mL)	N/A	8.0000	4.0000	6.0000

~ = The Method Reporting Limit has been substituted for results listed as ND for analysis purposes
* E. coli reported in units of most probable number per 100 mL (MPN/100 mL)
ND = Analytical result was below the Method Reporting Limit
N/A = Not applicable

TABLE 13

INFLOW AND OUTFLOW DATA SUMMARY

BMP EFFECTIVENESS MONITORING
STORMCEPTOR AT PIC
SAMPLE DATE: NOVEMBER 16, 1999

PARAMETER	INFLOW CONC. (mg/L)	OUTFLOW CONC. (mg/L)	DIFFERENCE CONC. (mg/L)	PERCENT REMOVAL	COMMMENTS
TSS	5.0000	7.5000	-2.5000	-50.00%	Only 1 detectable reading at 5 mg/L MRL
Oil and Grease, HEM	ND	ND	N/A	N/A	All results ND at 5 mg/L
Total Phosphorus	0.0300	0.0300	0.0000	0.00%	No net removal
Orthophosphate	0.0400	0.0400	0.0000	0.00%	No net removal
COD	ND	ND	N/A	N/A	All results ND at 15 mg/L
BOD5	2.0500	2.6000	-0.5500	-26.83%	Values too low to be meaningful
Total Lead	0.0010	0.0010	0.0000	0.00%	All results ND at .001 mg/L MRL
Total Copper	0.0040	0.0044	-0.0004	-10.00%	Slight increase
Total Zinc	0.0430	0.0400	0.0030	6.98%	Slight removal
Dissolved Lead	ND	ND	N/A	N/A	All results ND at .001 mg/L MRL
Dissolved Copper ~	0.0020	0.0023	-0.0003	-15.00%	Only 1 detectable reading at .002 mg/L MRL
Dissolved Zinc	0.0275	0.0235	0.0040	14.55%	Slight removal
Hardness	7.9650	9.7150	-1.7500	-21.97%	Slight increase
E. coli *	15.5000	8.0000	7.5000	48.39%	Some removal

~ = The Method Reporting Limit has been substituted for results listed as ND for analysis purposes
* E. coli reported in units of most probable number per 100 mL (MPN/100 mL)
ND = Non detectable
MRL = Method Reporting Limit
N/A = Not applicable

TABLE 14

INFLOW AND OUTFLOW DATA SUMMARY

BMP EFFECTIVENESS MONITORING
STORMCEPTOR AT PIC
SAMPLE DATE: MAY 10, 2000

PARAMETER	INFLOW CONC. (mg/L)	OUTFLOW CONC. (mg/L)	DIFFERENCE CONC. (mg/L)	PERCENT REMOVAL	COMMMENTS
TSS ~	7.5000	5.0000	2.5000	33.33%	No detectable outflow reading at 5 mg/L
Oil and Grease ~	5.0000	6.0000	-1.0000	-20.00%	Only 1 detectable reading at 5 mg/L MRL
Total Phosphorus	0.0350	0.0200	0.0150	42.86%	Some removal
BOD5	4.2000	3.2000	1.0000	23.81%	Slight removal
Total Lead ~	0.0010	0.0013	-0.0003	-30.00%	Only 1 detectable reading at .001 mg/L MRL
Total Copper	0.0072	0.0070	0.0002	2.78%	Slight removal
Total Zinc	0.0885	0.0955	-0.0070	-7.91%	Slight increase
Hardness	12.9500	16.9500	-4.0000	-30.89%	Some increase
E. Coli *	6.5000	6.0000	0.5000	7.69%	Slight removal

~ = The Method Reporting Limit has been substituted for results listed as ND for analysis purposes
* E. Coli reported in units of most probable number per 100 mL (MPN/100 mL)
ND = Analytical result was below the Method Reporting Limit
MRL = Method Reporting Limit
N/A = Not applicable

TABLE 15

STORMWATER MONITORING RESULTS

BMP EFFECTIVENESS MONITORING
STREAM GUARD TYPE II-0 AT THE PDX MAINTENANCE FACILITY
SAMPLE DATE: FEBRUARY 14, 2000

INLET 1

PARAMETER	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
TSS	5	110.0
Arsenic	0.0020	ND
Barium	0.0010	0.0329
Cadmium	0.0020	ND
Chromium	0.0050	0.0075
Lead	0.0010	0.0236
Mercury	0.00020	ND
Selenium	0.0020	ND
Silver	0.0030	ND
Oil & Grease, HEM	5	10.0

INLET 2

PARAMETER	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
TSS	5	280.0
Arsenic	0.0020	ND
Barium	0.0010	0.0228
Cadmium	0.0020	ND
Chromium	0.0050	ND
Lead	0.0010	0.0104
Mercury	0.00020	ND
Selenium	0.0020	ND
Silver	0.0030	ND
Oil & Grease, HEM	5	9.0

OUTLET

PARAMETER	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
TSS	5	10.0
Arsenic	0.0020	ND
Barium	0.0010	0.0071
Cadmium	0.0020	ND
Chromium	0.0050	ND
Lead	0.0010	0.0036
Mercury	0.00020	ND
Selenium	0.0020	ND
Silver	0.0030	ND
Oil & Grease, HEM	5	ND

ND = Analytical result was below the Method Reporting Limit.

TABLE 16

STORMWATER MONITORING RESULTS

BMP EFFECTIVENESS MONITORING
STREAM GUARD TYPE II-0 AT THE PDX MAINTENANCE FACILITY
SAMPLE DATE: APRIL 28, 2000

INLET 1

PARAMETER	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
TSS	5	126
Cadmium	0.004	ND
Lead	0.002	0.0280
Nickel	0.020	ND
Zinc	0.010	0.240
Oil & Grease, HEM	2	16

INLET 2

PARAMETER	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
TSS	5	95
Cadmium	0.004	ND
Lead	0.002	0.03
Nickel	0.020	ND
Zinc	0.010	0.215
Oil & Grease, HEM	2	9.3

OUTLET

PARAMETER	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
TSS	5	6.0
Cadmium	0.004	ND
Lead	0.002	ND
Nickel	0.020	ND
Zinc	0.010	0.3010
Oil & Grease, HEM	2	2.10

ND = Analytical result was below the Method Reporting Limit.

TABLE 17

INFLOW AND OUTFLOW DATA SUMMARY

BMP EFFECTIVENESS MONITORING
STREAM GUARD TYPE II-0 AT THE PDX MAINTENANCE FACILITY
SAMPLE DATE: FEBRUARY 14, 2000

PARAMETER	INLET 1 CONC. (mg/L)	INLET 2 CONC. (mg/L)	OUTLET CONC. (mg/L)	DIFFERENCE 1 CONC. (mg/L)	DIFFERENCE 2 CONC. (mg/L)	PERCENT REMOVAL 1	PERCENT REMOVAL 2	AVERAGE PERCENT REMOVAL	COMMENTS
TSS	110.0	280.0	10.0	100.0	270.0	90.91%	96.43%	93.67%	A large percentage of the TSS were removed.
Arsenic	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	All analytical results were below the MRL.
Barium	0.0329	0.0228	0.0071	0.0258	0.0157	78.42%	68.86%	73.64%	Much of the Barium was removed.
Cadmium	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	All analytical results were below the MRL.
Chromium ~	0.0075	0.0050	0.0050	0.0025	0.0000	33.33%	0.00%	16.67%	Only one analytical result exceeded the reporting MRL.
Lead	0.0236	0.0104	0.0036	0.0200	0.0068	84.75%	65.38%	75.07%	Much of the Lead was removed.
Mercury	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	All analytical results were below the MRL.
Selenium	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	All analytical results were below the MRL.
Silver	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	All analytical results were below the MRL.
Oil & Grease, HEM ~	10.0	9.0	5.0	5.0	4.0	50.00%	44.44%	47.22%	Much of the oil and grease was removed.

~ = The value for the Method Reporting Limit has been substituted for all results listed as ND for analysis purposes.
ND = Analytlical result was below the Method Reporting Limit
N/A = Not applicable
MRL = Method Reporting Limit

NOTE: Due to the physical layout of the system, the Outlet concentrations cannot be solely attributed to the removal of substances at the BMP Inlets.

TABLE 18

INFLOW AND OUTFLOW DATA SUMMARY

BMP EFFECTIVENESS MONITORING
STREAM GUARD TYPE II-0 AT THE PDX MAINTENANCE FACILITY
SAMPLE DATE: APRIL 28, 2000

PARAMETER	INLET 1 CONC. (mg/L)	INLET 2 CONC. (mg/L)	OUTLET CONC. (mg/L)	DIFFERENCE 1 CONC. (mg/L)	DIFFERENCE 2 CONC. (mg/L)	PERCENT REMOVAL 1	PERCENT REMOVAL 2	AVERAGE PERCENT REMOVAL	COMMMENTS
TSS	126	95	6	120	89	95.24%	93.68%	94.46%	A large percentage of the TSS were removed.
Cadmium	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	Analytical result was below the MRL.
Lead ~	0.028	0.03	0.0020	0.026	0.028	92.86%	93.33%	93.10%	Analytical result for the Outlet was below the MRL.
Nickel	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	Analytical result was below the MRL.
Zinc	0.24	0.215	0.301	-0.061	-0.086	-25.42%	-40.00%	-32.71%	More Zinc detected in the Outlet sample.
Oil & Grease, HEM	16	9.3	2.1	13.9	7.2	86.88%	77.42%	82.15%	A large percentage of the oil and grease was removed.

~ = The Method Reporting Limit has been substituted for all results listed as ND for analysis purposes.
ND = Analytical result was below the Method Reporting Limit.
N/A = Not applicable
MRL = Method Reporting Limit

NOTE: Due to the physical layout of the system, the Outlet concentrations cannot be solely attributed to the removal of substances at the BMP Inlets.

TABLE 19

STORMWATER MONITORING RESULTS

BMP EFFECTIVENESS MONITORING
OIL/WATER SEPARATOR AT TERMINAL 6
SAMPLE DATE: SEPTEMBER 14, 1999

INFLOW

PARAMETERS	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
Oil & Grease, HEM	5	180
Oil & Grease, SGT-HEM	5	150

OUTFLOW

PARAMETERS	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
Oil & Grease, HEM	5	ND
Oil & Grease, SGT-HEM	5	ND

ND = Analytical result was below the method reporting limit

TABLE 20

STORMWATER MONITORING RESULTS

BMP EFFECTIVENESS MONITORING
OIL/WATER SEPARATOR AT TERMINAL 6
SAMPLE DATE: JULY 3, 2000

INFLOW

PARAMETERS	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
TSS	5	12
Oil and Grease	5	ND
Benzene	0.5	ND
Toluene	1	ND
Ethylbenzene	1	ND
Total Xylenes	1	ND

OUTFLOW

PARAMETERS	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
TSS	5	6
Oil and Grease	5	ND
Benzene	0.5	ND
Toluene	1	2
Ethylbenzene	1	ND
Total Xylenes	1	4

ND = Analytical result was below the method reporting limit

TABLE 21

INFLOW AND OUTFLOW DATA SUMMARY

BMP EFFECTIVENESS MONITORING
OIL/WATER SEPARATOR AT TERMINAL 6
SAMPLE DATE: SEPTEMBER 14, 1999

PARAMETERS	INFLOW CONC. (mg/L)	OUTFLOW CONC. (mg/L)	DIFFERENCE CONC. (mg/L)	PERCENT REMOVAL	COMMENTS
Oil & Grease, HEM	180	5.0	175.0	97.22%	Mostly removed
Oil & Grease, SGT-HEM	150	5.0	145.0	96.67%	Mostly removed

NOTE: The Method Reporting Limit has been substituted for all results listed as ND for analysis purposes.

TABLE 22

INFLOW AND OUTFLOW DATA SUMMARY

BMP EFFECTIVENESS MONITORING
OIL/WATER SEPARATOR AT TERMINAL 6
SAMPLE DATE: JULY 3, 2000

PARAMETERS	INFLOW CONC. (mg/L)	OUTFLOW CONC. (mg/L)	DIFFERENCE CONC. (mg/L)	PERCENT REMOVAL	COMMENTS
TSS	12	6	6	50.00%	Much of the TSS was removed.
Oil and Grease	ND	ND	N/A	N/A	All concentrations were below the MRL.
Benzene	ND	ND	N/A	N/A	All concentrations were below the MRL.
Toluene ~	1	2	-1	-100.00%	The inflow concentration was ND.
Ethylbenzene	ND	ND	N/A	N/A	All concentrations were below the MRL.
Total Xylenes ~	1	4	-3	-300.00%	The inflow concentration was ND.

~ = The value for the reporting limit has been substituted for all results listed as ND, below the reporting limit, for analysis purposes.
ND = Analytical result was below the method reporting limit
N/A = Not applicable
MRL = Method Reporting Limit

TABLE 23

WATER QUALITY TESTING RESULTS

RAMSEY LAKE AREA--COLUMBIA SLOUGH TRIBUTARY--BIOSWALE
SAMPLE DATE: JUNE 12, 2000

SWALE INFLOW

PARAMETER	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
BOD5	2.0	8.50
E. coli *	N/A	17.0
TSS	5.0	15.0
Sulfate as SO4	0.50	ND
Total Phosphorus	0.010	0.080
Iron Bacteria	N/A	DETECTED
Copper	0.0020	ND
Hardness	0.40	95.70
Iron	0.010	5.130
Lead	0.0010	ND
Manganese	0.0010	1.150
Zinc	0.010	0.0190
Oil & Grease, HEM	5.0	5.0

SWALE OUTFLOW

PARAMETER	METHOD REPORTING LIMIT (mg/L)	SAMPLE CONC. (mg/L)
BOD5	2.0	3.60
E. coli *	N/A	13.0
TSS	5.0	5.0
Sulfate as SO4	0.50	1.0
Total Phosphorus	0.010	0.10
Iron Bacteria	N/A	DETECTED
Copper	0.0020	ND
Hardness	0.40	77.10
Iron	0.010	1.440
Lead	0.0010	ND
Manganese	0.0010	0.1490
Zinc	0.010	0.0130
Oil & Grease, HEM	5.0	3.0

* E. coli reported in units of most probable number per 100 mL (MPN/100mL)
ND = Analytical result was below the Method Reporting Limit.
N/A = Not applicable

TABLE 24

INFLOW AND OUTFLOW DATA SUMMARY

RAMSEY LAKE AREA--COLUMBIA SLOUGH TRIBUTARY--BIOSWALE
SAMPLE DATE: JUNE 12, 2000

PARAMETER	INFLOW CONC. (mg/L)	OUTFLOW CONC. (mg/L)	DIFFERENCE CONC. (mg/L)	PERCENT REMOVAL	COMMMENTS
BOD5	8.50	3.60	4.90	57.65%	The BOD5 was reduced.
E. coli *	17.0	13.0	4.00	23.53%	Some of the E. coli was removed.
TSS	15.0	5.0	10.00	66.67%	Much of the TSS was removed.
Sulfate as SO4 ~	0.50	1.0	-0.50	-100.00%	The inflow concentration was below the MRL.
Total Phosphorus	0.080	0.10	-0.02	-25.00%	More Phosphorus was detected in the Outflow sample.
Iron Bacteria	DETECTED	DETECTED	N/A	N/A	Iron Bacteria was detected in both samples.
Copper	ND	ND	N/A	N/A	All analytical results was below the MRL.
Hardness	95.70	77.10	18.60	19.44%	The hardness was slightly reduced.
Iron	5.130	1.440	3.69	71.93%	A large percentage of the Iron was removed.
Lead	ND	ND	N/A	N/A	All analytical results was below the MRL.
Manganese	1.150	0.1490	1.00	87.04%	A large percentage of the Manganese was removed.
Zinc	0.0190	0.0130	0.01	31.58%	Some of the Zinc was removed.
Oil & Grease, HEM	5.0	3.0	2.00	40.00%	Much of the oil and grease was removed.

* E. coli reported in units of most probable number per 100 mL (MPN/100mL)
~ = The value for the reporting limit has been substituted for all results listed as ND, below the reporting limit, for analysis purposes.
ND = Analytical result was below the Method Reporting Limit.
N/A = Not applicable
MRL = Method Reporting Limit

TABLE 25
ENVIRONMENTAL TRAINING DURING THE JULY 1, 1999 TO JUNE 30, 2000 PERMIT COMPLIANCE TERM

Operating Area/Department	Training Topic(s)	Attendees	Date(s)
PDX	Stormwater and Deicing Awareness	PDX Communications Center Group; Aviation Finance Group; Aviation, Port Fire Department, Aviation Maintenance Center Group	Oct. 1999
PDX	OSHA Annual Training & Spill Prevention and Response (2-hour hands-on equipment training)	Port Fire Department, Aviation Environmental Group, General Maintenance Group	Oct.-Nov. 1999
PDX	Spill Prevention and Response (1-hour general training)	All PDX staff members	Oct.-Nov. 1999
PDX	Construction De-Watering and Erosion Control	Construction Inspection Group, General Maintenance Group, Engineering Group	Oct.-Nov. 1999
PDX	AAAE Deicing Conference	Aviation Environmental Group	Aug. 1999
PDX	EPA Water Quality Standards Academy	Aviation Environmental Group	Jul. 2000
PDX	Aviation BMP Committee Meetings	PDX Staff and Tenants	Monthly
PSY	Environmental Best Management Practices	Cascade General Supervisors	May 2000

TABLE 25
ENVIRONMENTAL TRAINING DURING THE
JULY 1, 1999 TO JUNE 30, 2000 PERMIT COMPLIANCE TERM (CONT.)

Operating Area/Department	Training Topic(s)	Attendees	Date(s)
PSY	New Hire Orientation	All new hourly employees	Various Dates
Marine	Government Institue's Environmental Compliance Bootcamp	Marine Environmental Staff	Feb. 2000
Marine	Spill Response Training	Marine Environmental Staff, Marine Security Staff	May-Jun. 2000
Marine	Marine Terminal Tenant Meetings	Marine Terminal Staff and Tenants	Monthly
ESD	City of Portland Erosion Control Manual Training	ESD Staff, Properties Staff	Mar. 2000
ESD	Oregon Chapter of Air & Waste Management Association TMDL Conference	ESD Staff	Mar. 2000
ESD	5th Annual Water Conference	ESD Staff	Apr. 2000
ESD, PDX	Endangered Species Act/Clean Water Act Conference	ESD Staff	Apr. 2000
ESD	ACWA Stormwater Summit	ESD Staff	May 2000

TABLE 26
Marine BMP Development Schedule

BMP	Present BMP Topic	Review Draft BMP	Finalize BMP
• BMP001 Stormwater Management/Water Quality	Complete (6/99)		
• BMP002 Spill Response	Complete (7/99)		
• BMP003 Emergency Response Procedures	Complete (8/99)		
• BMP004 Environmental Reporting & Record Keeping - Required by Regulation	Complete (11/99)		
• BMP005 Environmental Reporting & Record Keeping - Required by Regulation	On Hold		
• BMP006 Waste Management	Complete (11/99)		
• BMP007 Hazardous Waste, Universal Waste & Used Oil Management	Complete (12/99)		
• BMP008 Hazardous Materials Management	Complete (3/00)		
• BMP009 Facility & Equipment Maintenance	Complete (3/00)		
• BMP010 Equipment & Vehicle Washing	Complete (5/00)		
• BMP011 Facility Development/Construction	In Progress		
• BMP012 Sediment & Erosion Control	In Progress		
• BMP013 UST/AST/Mobile Tanks/Fueling Operations	To Be Developed		
• BMP014 Air Quality			
• BMP015 Asbestos			
• BMP016 Wetlands			
• BMP017 Endangered Species Protection			
• BMP018 Building & Grounds Maintenance			
• BMP019 Vessel Maintenance & Painting			

Appendix B – List of Figures

Figure 1	Port-wide Environmental Services
Figure 2	Best Management Practices Summary Form
Figure 3	PDX – Industrial Stormwater Field Data Record
Figure 4	Monthly Industrial Stormwater Inspections - Outfalls
Figure 5	Industrial Stormwater Inspections – Catch Basins
Figure 6	Monthly Industrial Stormwater Inspections – Industrial Areas
Figure 7	Storm System Incident Report Form
Figure 8	Monthly Industrial Stormwater Inspections -ASTs
Figure 9	Port of Portland Storm Water Use Agreement
Figure 10	Ordinance 361 of the Port of Portland

FIGURE 1
PORT-WIDE
ENVIRONMENTAL SERVICES
August 2000

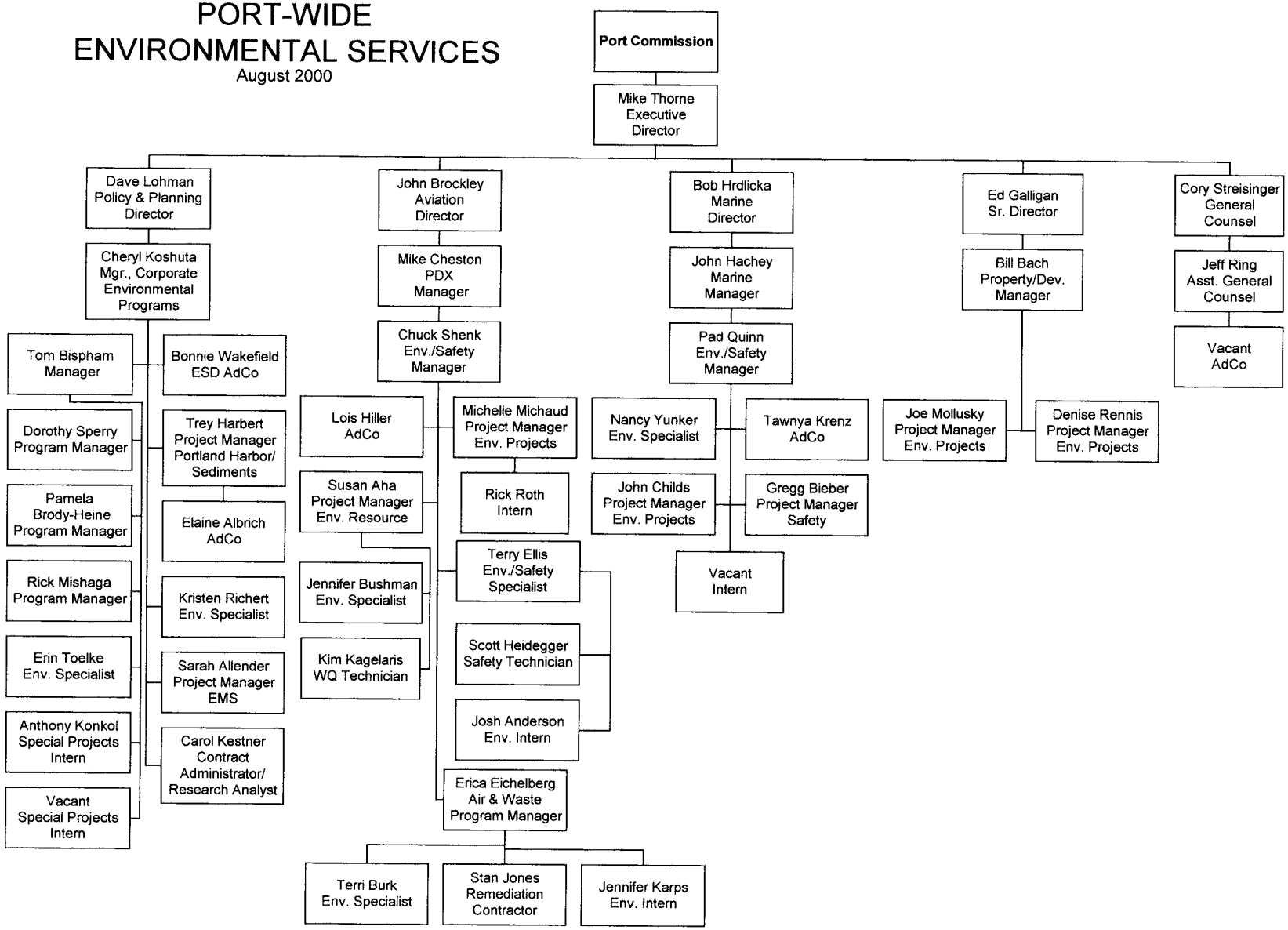


FIGURE 2

Best Management Practices Summary Form

Form completed by: _____ Date: _____

Port Operating Area(s) that the BMP has been or will be implemented in: _____

_____

Who is responsible for BMP implementation: _____

_____

Describe the BMP: _____

_____

_____

_____

_____

_____

_____

Who is responsible for maintenance of the BMP: _____

_____

Where are the maintenance records maintained: _____

_____

How/where is the BMP documented in the operating area: _____

_____

_____

FIGURE 3
PDX – INDUSTRIAL STORMWATER
FIELD DATA RECORD

Port of Portland
Aviation Environmental Department
Water Issues

Project No. 51918; Task No. 427

SAMPLE COLLECTION DATE:	**TIME:**
SAMPLED BY:	
SAMPLE SITE LOCATION:	

WEATHER CONDITIONS (for past 3 days): (circle all that apply)

COLD WET RAINY (amt:_____) DRY OTHER..specify_____

ANALYSIS TO BE PERFORMED (by contract lab): (circle)

Cu, T Pb, T Zn, T pH TSS OG E. Coli Tphos BOD5

Note:Samples collected and analyzed in accordance with 40CFR136; Containers are supplied prepreserved by contract lab.Container type and preservative are in accordance with 40CFR136.

FIELD ANALYSES PERFORMED:

Date Meas.:_____ **Time Meas.:** _____ **Temp.:** _____ °F **pH:**_____Std. Units Port Meter No.: _____ Port Meter No.: _____

VISUAL OBSERVATIONS:

FLOATING SOLIDS: _____ OIL & GREASE SHEEN:_____

PH METER CALIBRATION: **Port Meter No:**_____

Date: _____	PH 4.0	PH 7.0	PH 10.0	
Time:_____	_____	_____	_____	**Calibrated by**:_____

WILDLIFE PRESENT: NO YES, specify:_____

NOTES: _____

_____

FIGURE 4

MONTHLY INDUSTRIAL STORMWATER INSPECTIONS - OUTFALLS

Portland International Airport

SITE	DESCRIPTION	WATER LEVEL	WATER COLOR	WATER CLARITY	FLOATING SOLIDS	O & G SHEEN	TEMP. °F	COMMENTS/ FOLLOWUP
		CIRCLE ONE	CIRCLE ONE	CIRCLE ONE	CIRCLE ONE	CIRCLE ONE	°F=(°C x 9/5) + 32	
BASIN 1 1A	West Perimeter Rd., taxiway C, Go thru Ped Gate	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 1 1B	Ditch running alongside Elrod, off NE 33rd	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 2 Pond	West Detention Pond	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 4 Outfall	48" outfall structure across Cornfoot from Central Quies. pond	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 4 Pond	Central Quies. Pond	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 5 Outfall	Intersect. Of AirTrans Way & Cornfoot Rd	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		

FIGURE 4

MONTHLY INDUSTRIAL STORMWATER INSPECTIONS - OUTFALLS

Portland International Airport

SITE	DESCRIPTION	WATER LEVEL	WATER COLOR	WATER CLARITY	FLOATING SOLIDS	O & G SHEEN	TEMP. °F	COMMENTS/ FOLLOWUP
		CIRCLE ONE	CIRCLE ONE	CIRCLE ONE	CIRCLE ONE	CIRCLE ONE	°F=(°C x 9/5) + 32	
BASIN 6	East Detention Pond	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 7	S. side of PMF, by Ped. Gate SP19	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 8	P.I.C. , off NE 92nd	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 9 9A	Culvert on S side of NE Airport Way at I205 south onramp	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		
BASIN 9 9B Outfall	Glass Plant Road	LOW NORMAL HIGH VERY HIGH	GREEN BROWN GRAY BLUE	CLEAR TURBID CLOUDY MUDDY	LIGHT MEDIUM HEAVY NONE	LIGHT MEDIUM HEAVY NONE		

WEATHER FOR PAST 3 DAYS (Circle all that apply): COLD WET RAINY DRY OTHER:_____

PORT DO METER NO. _____ USED FOR TEMPERATURE READING

INSPECTED BY: _____ DATE: _____

FIGURE 5

INDUSTRIAL STORMWATER INSPECTIONS – Catch Basins

Portland International Airport

CATCH BASIN NO.	CONDITION OF STRUCTURE	DEBRIS IN CATCH BASIN	DOES CATCH BASIN NEED TO BE CLEANED?	ODOR	SHEEN	COMMENTS/ FOLLOWUP
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	
	GOOD NEEDS MNTC EXPLAIN:	LEAVES SILT GRASS SAND TRASH NONE OTHER	NO YES EXPLAIN:	MUSTY PETROLEUM OTHER NONE	LIGHT MEDIUM HEAVY NONE	

WEATHER FOR PAST 3 DAYS (Circle all that apply): COLD WET RAINY DRY OTHER:_____

INSPECTED BY: _____ DATE: _____

FIGURE 6

MONTHLY INDUSTRIAL STORMWATER INSPECTIONS – INDUSTRIAL AREAS

Portland International Airport

SITE	DESCRIPTION	GENERAL HOUSEKEEPING	EVIDENCE OF SPILLS	BOOM CONDITION	COMMENTS	FOLLOWUP
		CIRCLE ONE	CIRCLE ONE	CIRCLE ONE		
Port Maintenance Facility	Vehicle Storage Area (Open Bay)	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	HAZMAT Building and loading dock	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Buildings 7111/7115/7113/7119 General	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Catch Basin Filters	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Fuel Island	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Dumpster (by fuel island)	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Vehicle Wash Rack	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Oil/Water Separator (located at fuel island)	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Sweeper & Catch Basin Debris Containment area	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Building 6440 (82nd Ave)	GOOD NEEDS ATTENTION	NO YES explain:	N/A		

FIGURE 6

MONTHLY INDUSTRIAL STORMWATER INSPECTIONS – INDUSTRIAL AREAS

Portland International Airport

SITE	DESCRIPTION	GENERAL HOUSEKEEPING	EVIDENCE OF SPILLS	BOOM CONDITION	COMMENTS	FOLLOWUP
		CIRCLE ONE	CIRCLE ONE	CIRCLE ONE		
Central Utility Plant	Bldg # 7110 7320 NE Airport Way	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Dumpster	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
East Quiescent Pond	Basin # 6 3 booms	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
East Detention Pond	Basin # 6 1 boom	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
Central Quiescent Pond	Basin # 4 3 booms	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
West Quiescent Pond	Basin # 2 3 booms	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
West Detention Pond	Basin # 2 1 boom	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
Basin #7 Booms	South side of PMF, go thru Ped gate SP19	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		

FIGURE 6

MONTHLY INDUSTRIAL STORMWATER INSPECTIONS – INDUSTRIAL AREAS

Portland International Airport

SITE	DESCRIPTION	GENERAL HOUSEKEEPING	EVIDENCE OF SPILLS	BOOM CONDITION	COMMENTS	FOLLOWUP
		CIRCLE ONE	CIRCLE ONE	CIRCLE ONE		
	7N boom is located across road from 7N deicing monitoring location	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
	7W Ditch west of PMF, just east of road to ANG	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
Basin # 5 Boom	Intersection of AirTrans Way and Cornfoot	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
Basin # 9 Boom	Site: 9A Culvert on south side of NE Airport Way at I205 South onramp	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
Basin # 8 Boom	P.I.C, off NE 92nd	GOOD NEEDS ATTENTION	NO YES explain:	NEW GOOD REPLACE		
Dumpsters	Terminal	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Rental Car Quick Turnaround	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
	Taxi Hold Area	GOOD NEEDS ATTENTION	NO YES explain:	N/A		

FIGURE 6

MONTHLY INDUSTRIAL STORMWATER INSPECTIONS – INDUSTRIAL AREAS

Portland International Airport

SITE	DESCRIPTION	GENERAL HOUSEKEEPING	EVIDENCE OF SPILLS	BOOM CONDITION	COMMENTS	FOLLOWUP
		CIRCLE ONE	CIRCLE ONE	CIRCLE ONE		
Deicing/ Glycol Area		GOOD NEEDS ATTENTION	NO YES explain:	N/A	Seasonal usage	
FireHouse	Oil/Water Separator (by Diesel AST)	GOOD NEEDS ATTENTION	NO YES explain:			
Fire Training Facility	Oil/Water Separator	GOOD NEEDS ATTENTION	NO YES explain:	N/A		
Other/Misc						

WEATHER FOR PAST 3 DAYS (Circle all that apply): COLD WET RAINY DRY OTHER:_____

INSPECTED BY: _____ DATE: _____

FIGURE 7

Storm System Incident Report Form

How was the incident discovered? (call/inspection)_____
Who discovered the incident or took the call?_____
Date:_____ Time:_____

Outfall/ drainage location:_____

Description of incident:_____

_____

_____

Source or possible source of discharge_____

_____

Describe corrective action:_____

_____

_____

_____

Were samples collected? yes_____ no_____
Who collected the samples?_____
List laboratory analysis requested:_____

_____

Were photographs taken? Yes_____ no_____
Who took the photos?_____

Responsible party
Name:_____

Phone:_____

Address:_____

Signature of person making report:_____

FIGURE 8

MONTHLY INDUSTRIAL STORMWATER INSPECTION – ASTs

Portland International Airport

TANK #	DESCRIPTION/ CONTENTS	LOCATION	LEAKS	EVIDENCE OF SPILLS	CONDITION OF BOOM	CONDITION OF PUMP	COMMENTS/ FOLLOWUP
			Circle One	Circle One	Circle One		
AST # 22	2000 Gallon JP-4	Live Fire Training Facility	NO YES	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	
AST # 24	400 Gallon JP-4 + water	Live Fire Training Facility	NO YES	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	
AST # 272	1000 Gallon Diesel	Firehouse	NO YES	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	
AST # 273	500 Gallons Waste Oil	Port Maintenance Facility SE of bldg	NO YES	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	
AST # 279	500 Gallons Diesel (for emergency generator)	Port Maintenance Facility Loading dock area	NO YES	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	
Pavement Anti-icing	Potassium Acetate	PMF	NO YES	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	

FIGURE 8

MONTHLY INDUSTRIAL STORMWATER INSPECTION – ASTs

Portland International Airport

TANK #	DESCRIPTION/ CONTENTS	LOCATION	LEAKS	EVIDENCE OF SPILLS	CONDITION OF BOOM	CONDITION OF PUMP	COMMENTS/ FOLLOWUP
			Circle One	Circle One	Circle One		
Pavement De-icing	Potassium Formate	PMF	NO YES	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	
Pavement Anti-icing	Magnesium Chloride	PMF	NO YES	NO YES	NEW GOOD REPLACE NONE	GOOD NEEDS MNTC NONE	

WEATHER FOR PAST 3 DAYS (Circle all that apply): COLD WET RAINY DRY OTHER:_____

INSPECTED BY: _____ DATE: _____

FIGURE 9

STORM WATER USE AGREEMENT

THE PORT: The Port of Portland
P.O. Box 3529
Portland, Oregon 97208

USER: Name _____
Address _____
City/State/Zip _____

RECITALS

A. The Port and User are parties to a lease dated _____ (Port Agreement No. _____) (the "Lease", by reference incorporated herein), pursuant to which User has certain rights to use the real property that is the subject of the Lease (the "leased property").

B. The Port owns or operates a storm water sewer system ("System"). User wishes to use the System for the disposal of storm water discharged by User's operations on the Property.

C. The Port has, or will have, a municipal storm water discharge permit ("Municipal Permit"), and, has or will have an industrial storm water permit ("Storm Water Permit"), (collectively, "Permits") that may govern the discharge of storm water from the System into the waters of the United States or into a separate municipal storm water system.

AGREEMENT

1.1 Connection

User shall connect to the System in a manner approved or prescribed in writing by the Port, in the sole discretion of the Port. Connection to the System shall include provisions acceptable to the Port that will allow for sampling of User's storm water discharge upstream from or at its entry into the System.

1.2 Use

User's discharge shall be limited to storm water discharged pursuant to the Port's the Port's storm water permit, and shall comply with this Agreement, all terms of the storm water permit, all applicable terms of any storm water pollution control plans ("Plans"), if any, the terms of any other applicable agreements between User and the Port and any applicable rules governing storm water adopted by the Port in response to changes of law or storm water permit terms.

1.3 Disconnection

User shall give the Port at least thirty (30) days advance written notice before disconnecting from the System and shall restore the System and impacted real property to substantially its original condition upon disconnecting in a manner agreed to, in advance, by the Port.

1.4 Storm Water Permit

User must become familiar with and abide by all of the requirements of the Port's storm water permit(s). At any time that User is not covered by the Port's storm water permit, User shall obtain any necessary permits for storm water discharge into the Port's System and discharge in a manner which allows the Port to comply with the Port's storm water permit.

1.5 Storm Water Permit Fee

User shall pay to the Port by August 1 of each fiscal year a nonrefundable storm water system use fee ("Use Fee") of TWO HUNDRED FIFTY DOLLARS ($250) **[[[For GA Airports, the Use Fee is ONE HUNDRED FIFTY DOLLARS ($150).]]].** The annual Use Fee shall not be reduced to reflect periods during which User does not discharge into the System. If User begins discharging into the System after July 1, the Use Fee for that fiscal year (July 1 to June 30) shall be paid to the Port within thirty (30) days after User begins discharging into the System. The Port may adjust the Use Fee from time to time to reflect changes in the Port's cost to administer and comply with the storm water permit. The Port shall give User at least ninety (90) days written notice prior to the beginning of the fiscal year in which an adjustment to the Use Fee is to be effective.

1.6 Other Charges

The Port reserves the right to impose reasonable charges uniformly applied to similarly situated lessees for the repair, maintenance, and regulation of the System. The Port will provide User with at least thirty (30) days prior written notice of the imposition of or any increase in any such charge.

1.7 Municipal Storm Water Permit Requirements

Nothing in this Agreement shall be deemed to affect the Port's ability to comply with its Municipal Storm Water Permit, issued to the Port by the Oregon Department of Environmental Quality ("DEQ"), including, but not limited to, compliance with the requirement that the Port have and enforce a storm water management plan and storm water rules. Enforcement by the Port of a storm water management plan or storm water rules may result in the imposition of additional requirements upon User.

1.8 Storm Water Pollution Control Plans

If the Port is required to have one or more Storm water Pollution Control Plans ("Port Plans"), then User shall comply with the Port Plans, as amended from time to time. User may be required to adopt its own storm water pollution control plan, in which case User's storm water

pollution control plan shall be consistent with the Port's Plans, and shall be amended as necessary to maintain consistency with the Port's Plans, as amended. The Port will provide User with its current Port Plan(s). The Port shall also provide User with advance notice (and in no event less than thirty (30) days advance notice) before User becomes subject to any amendments to the Port Plan(s) or new Port Plans.

1.9 Storm Water Sampling

If User undertakes storm water sampling for any purpose, User shall provide the Port with copies of any and all storm water sampling results obtained by User of storm water generated at, discharged from, or present on the Premises, within ten (10) days of receipt of the laboratory results.

2. INDEMNIFICATION

User shall indemnify, defend, and hold harmless the Port and the Port's commissioners, employees, and agents against any liability whatsoever, including but not limited to penalties or fines imposed by governmental agencies, arising from acts, including but not limited to negligent or illegal acts, of User or User's officers, employees or agents, that result in or contribute to a violation of any requirement of the Permits, User's Permit, or federal, state or local environmental laws, regulations, rules or requirements or that result in or contribute to damage to the System, the Port's property or property belonging to a third party or bodily injury to a third party. User's duty to indemnify, defend, and hold harmless in the case of acts that contribute to a violation shall be limited to User's proportionate contribution relative to any other contributors to the violation, provided that nothing in this limitation shall be deemed to reduce User's liability for the improper disposal of a hazardous waste or the release of a hazardous substance.

3. PERMISSION TO ENTER AND INSPECT

3.1 Right of Entry

During the period in which User is connected to the System, User hereby grants the Port, or any person designated by the Port as the Port's representative, permission to enter upon User's lands, leaseholds, and improvements from which discharges of storm water into the System originate for the limited purposes of:

- Monitoring User's storm water discharge;
- Inspection for compliance with the Port's storm water permit, and storm water management and pollution control plans, if any;
- Investigation of violations of federal, state, or local laws, rules, or requirements governing storm water, and all rules, regulations, and policies adopted by the Port applicable to the Port owned storm sewer system;
- Investigation of violations of the Permits or of the Port's storm water management or pollution control plan, if any;
-

- Sampling User's storm water discharge; and
- Any other purpose reasonably necessary for compliance with the Permits or local, state or federal environmental statutes, rules, regulations or requirements.

3.2 Notice

The Port shall give User at least 30 minutes advance notice, before seeking entry into an enclosed area or a building under this Agreement and shall schedule any such inspection to minimize interference with User's operations. Nothing in this paragraph 7 shall constitute a waiver by User of any constitutional right, including, without limitation, the right to be free of unreasonable searches and the right to avoid self incrimination. In the event of an emergency where prompt investigation and action is necessary to avoid imminent serious pollution, the Port will make a reasonable attempt to give advance notice, but may exercise its right under this Agreement without undue delay.

3.3 No Limitation

Notwithstanding the foregoing, this Agreement shall not be construed to modify or limit the Port's inspection or other rights which the Port may have under any lease, operating or other agreement with User or any others with respect to the Property or the System.

4. STORM WATER TREATMENT SYSTEM

In order to comply with storm water discharge requirements, User may be required to treat User's storm water prior to discharge. If treatment is required, the Port shall have the right to approve or disapprove the method, design, and installation of any such treatment system in order to ensure compliance with applicable laws and regulations and protection of Port property.

5. TERMINATION

The Port, in its sole discretion, may terminate this Agreement in the event that User violates any of the terms of this Agreement or any federal, state, or local laws or regulations relating to User's storm water discharges. Unless terminated earlier pursuant to the preceding sentence, this Agreement shall terminate automatically with the expiration of the underlying lease. This Agreement can be amended or renewed only by a written document signed by both of the parties.

6. NO ASSIGNMENTS

User may not assign or convey any rights that arise under this Agreement to any other person or entity.

7. INTEGRATION, MODIFICATION

This Agreement includes the entire agreement of the parties regarding User's connection to, discharge of storm water into, and disconnection from the System, and supersedes all prior and contemporaneous agreements and communications regarding the same subject. This Agreement may be amended only by a writing signed by each party or the party's authorized representative.

Notwithstanding the provisions of this paragraph, the Port may notify User by letter of the amount of any charges imposed under this Agreement, and of changes in those charges.

8. NOTICES

8.1 Written Notices

All written notices required or desired to be given under this Agreement shall be in writing and may be delivered by hand delivery or by placement in the U.S. mails, postage prepaid as registered or certified mail, return receipt requested, addressed to the Port at:

The Port of Portland
P.O. Box 3529
Portland, Oregon 97208
Attn: _____

with a copy to:

The Port of Portland
P.O. Box 3529
Portland, Oregon 97208
Attn: Legal Department

and to Operator at:

_____

_____

_____

8.2 Oral Notices

All oral notices required or desired to be provided under this Agreement shall be deemed to be properly served if personally delivered by a properly identified and authorized representative of the party delivered to the following:

To the Port _____ Environmental and Safety Manager

(503) _____

To the User _____

(503) _____

9. AUTHORITY OF SIGNERS

Each individual signing below warrants that he or she is the signing party, or is the authorized representative of the party for which he or she signs with authority to bind that party to the terms of this Agreement.

USER

By: _____
Title: _____

THE PORT OF PORTLAND

By: _____
Mike Thorne, Executive Director

APPROVED AS TO LEGAL SUFFICIENCY FOR THE PORT

By: _____
Counsel for Port of Portland

FIGURE 10

ORDINANCE NO. 361

OF

THE PORT OF PORTLAND

AN ORDINANCE REGULATING STORM WATER.

BE IT ENACTED BY THE PORT OF PORTLAND:

SECTION 1. FINDINGS AND PURPOSE

1.1 Findings

The Port of Portland Board of Commissioners finds:

(a) The public interest and the interests of the Port of Portland will be served if pollution of the Willamette and Columbia Rivers and other waters due to pollutants in storm water runoff can be minimized;

(b) Environmental Protection Agency storm water regulations adopted pursuant to the Clean Water Act require the Port to obtain a National Pollution Discharge Elimination System municipal storm water permit and to manage storm water by:

(i) Controlling the contribution of pollutants to Port municipal storm sewers by storm water associated with industrial activity;

(ii) Prohibiting illicit discharges of pollutants to Port municipal separate storm sewers;

(iii) Controlling the discharge to Port municipal separate storm sewers of spills, dumping, or disposal of materials other than storm water; and

(iv) Requiring compliance by third persons with the foregoing requirements under ordinances, permits, contracts, or orders issued by the Port.

1.2 Purpose

The purpose of this ordinance is to regulate the discharge of storm water into Port storm sewers to minimize water pollution due to pollutants discharged in storm water, and to comply with the Clean Water Act and with the National Pollution Discharge Elimination System municipal storm water permit issued to the Port under the Clean Water Act.

SECTION 2 - DEFINITIONS

As used in this ordinance, unless the context clearly requires otherwise:

2.1 "Executive Director" means the Executive Director of the Port.

2.2 "Illicit discharge" means any discharge to a storm sewer that is not composed entirely of storm water, except (1) discharges under an National Pollution Discharge Elimination system (NPDES) permit other than the municipal NPDES storm water permit issued to

the Port and (2) discharges resulting from fire fighting activities.

2.3 "Person, in possession of land owned by the Port" means the individual, partnership, corporation, or other entity that has a right to occupy or control Port land pursuant to law or under a lease, permit, right of entry, facility use agreement, or other contract with the Port of Portland. "Port land" means land to which the Port holds legal title and in which the Port has something more than a mere security interest.

2.4 "Pollutants" means dredged material, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage Sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or agricultural waste.

2.5 "Port" means the Port of Portland.

2.6 "Storm sewer" means a conveyance or system of conveyances, including without limitation roads with drainage systems, catch basins, curbs, gutters, ditches, man-made channels, or storm drains, that is designed or used for collecting or conveying storm water.

2.7 "storm water" means storm water runoff, snow melt runoff, and surface runoff and drainage.

SECTION 3 - ILLICIT DISCHARGES

No person shall make, cause, or allow an illicit discharge into a storm sewer owned or operated by the Port.

SECTION 4 - CONNECTIONS

No person shall connect to a storm sewer owned or operated by the Port without first obtaining written permission from the Port.

SECTIONS 5 - INSPECTIONS

Upon reasonable notice to the person in possession of land owned by the Port, the Port may inspect that land and storm sewers on the land for violations of this Ordinance or of any law or regulation governing the conveyance or disposal of storm water. The right to inspect under this section is in addition to any right under a lease, use agreement or other contract between the Port and the person in possession of the land.

SECTION 6 - RULES

The Executive Director or the Executive Director's designee shall adopt rules to control:

(1) The contribution of pollutants to storm sewers owned or operated by the Port;

(2) The quality of storm water discharged from the sites of industrial activity on land owned by the Port; and

(3) The discharge to storm sewers owned or operated by the Port of pollutants from spills, dumping, or the disposal of materials other than storm water.

SECTION 7 - PENALTIES

Any person violating section 3 or 4 of this ordinance shall be guilty of a misdemeanor pursuant to ORS 777.990(2). If a violation of section 3 or 4 of this Ordinance is continuing or recurrent each calendar day during which the violation occurs or continues shall be deemed a separate violation.

SECTION 8 - SAVINGS CLAUSE

All parts of this Ordinance are hereby declared separable and independent of all others. If any phrase, clause, sentence,

paragraph, or section of this ordinance is declared invalid for any reason, the remainder of this ordinance shall not be invalidated by that declaration, but shall remain in full force and effect.

ADOPTED THIS 11th day of March 1992, being the date of its second reading before the Board of Commissioners of the Port of Portland.

By: (ORIGINAL SIGNED)
Assistant Secretary

By: (ORIGINAL SIGNED)
President

APPROVED AS TO LEGAL SUFFICIENCY

(ORIGINAL SIGNED)
Counsel for the Port of Portland

APPROVED BY COMMISSION

3-11-92
(date)

Section V

MULTNOMAH COUNTY DRAINAGE DISTRICT NO. 1 (MCDD#1)

PENINSULA DRAINAGE DISTRICT NO. 1 (PENN 1)

PENINSULA DRAINAGE DISTRICT NO. 2 (PENN 2)

MULTNOMAH COUNTY DRAINAGE DISTRICT NO. 1
PENINSULA DRAINAGE DISTRICT NO. 1
PENINSULA DRAINAGE DISTRICT NO. 2

NPDES MS4
ANNUAL COMPLIANCE REPORT
FISCAL YEAR 1999-2000

During permit year five, the drainage districts examined their role under the permit and determined they could fulfill this role effectively through memoranda of agreement (MOAs) among all the parties. As a result, they have proposed taking that approach, rather than continuing as a co-permittee, in the second five-year permit term. DEQ has not formally accepted this status change, pending review of the permit renewal; however, the drainage districts expect that DEQ will support the MOA concept as the appropriate vehicle for their participation. With this in mind, the drainage districts' Annual Compliance Report is the same as their report for last fiscal year (1998-99). As noted in last year's report, the districts are devoting considerable effort toward complying with the BMPs in the permit and are investing resources in new initiatives to improve water quality and habitat inside their jurisdictional boundaries. Progress on these programs is continuing on the track described in the 1998-99 Annual Compliance Report.

Appendix A

CITY OF PORTLAND NPDES STORMWATER PERMIT

SEP 0 7 1995

Oregon

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHWEST REGION

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

DAVID KLIEWER PE
STORMWATER/WATERSHED DIVISION MANAGER
CITY OF PORTLAND
BUREAU OF ENVIRONMENTAL SERVICES
1120 SW FIFTH #400
PORTLAND OR 97204

Re: Municipal Separate Storm Sewer Discharge Permit
File Number 108015
Multnomah County

We have completed our review of your permit application and the comments received regarding the preliminary draft permit which was mailed to you for review on January 6, 1995, as well as comments received during the May 3 public hearing and participation period, and have issued the enclosed National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit.

We greatly appreciate the effort the City and Co-permittees have expended in putting together what we hope will be a model storm water program.

This permit will be considered as the final action on permit application number 995938.

If you are dissatisfied with the conditions or limitations of this permit, you have 20 days to request a hearing before the Environmental Quality Commission or its authorized representative. Any such request shall be made in writing to the Director and shall clearly state the grounds for the request.

You are urged to carefully read the permit and take all possible steps to comply with the conditions established. If you have questions regarding the permit, please contact Paul Keiran at (503) 229-5937.

Sincerely,

Neil J. Mullane

Neil J. Mullane, Manager
Water Quality Source Control
Northwest Region

John A. Kitzhaber
Governor

js
Enclosure

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471

DEQ-1

COPY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

Department of Environmental Quality
Northwest Region Office
2020 S.W. Fourth Avenue, Suite 400, Portland, OR 97201
Telephone: (503) 229-5263

Issued pursuant to ORS 468B.050 and The Federal Clean Water Act

---

ISSUED TO CO-PERMITTEES:

City of Portland
1120 SW Fifth Avenue
Room 400
Portland OR 97204-1972

Multnomah County

Port of Portland

Oregon Department of Transportation

Multnomah County Drainage District #1

Peninsula Drainage District #1

Peninsula Drainage District #2

SOURCES COVERED BY THIS PERMIT:

All Existing and New Discharges of Storm Water From the Municipal Separate Storm Sewer System Within the City of Portland Urban Services Boundary

RECEIVING STREAM INFORMATION:

Basin: Willamette, Columbia
Subbasin: Lower Willamette and Tualatin
Stream: Willamette River*#, Columbia River*#, Columbia Slough*, Fanno Creek#, Balch Creek*, Johnson Creek*, Tryon Creek*, Smith Lake, Bybee Lake

Hydro Code: 22=-WILL, 10=-COLU
County: Multnomah

* These water bodies have been designated, or drain to water bodies that have been designated, as water quality limited.

Total Maximum Daily Loads/Waste Load Allocations/Load Allocations have been established for these water bodies.

DESCRIPTION OF SYSTEM:

Municipal Separate Storm Sewer System

EPA REFERENCE NO: ORS 108015

Issued in response to Application No. 995938 received May 26, 1993 and Addendum No. 1 to the application, dated May 17, 1994.

This permit is issued based on the land use findings in the permit record.

Tom Bispham
Tom Bispham, Administrator
Northwest Region

September 7, 1995
Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the co-permittees are authorized to implement a storm water management program to reduce the contribution of pollutants in storm water to the maximum extent practicable and to discharge storm water to public waters in conformance with all the requirements and conditions set forth in the attached schedules as follows:

	Page
Schedule A - Controls and Limitations	2
Schedule B - Minimum Monitoring and Reporting Requirements	3
Schedule C - Compliance Conditions and Schedules	*
Schedule D - Special Conditions	4
General Conditions	Attached

* The standard Schedule C is omitted from this permit because the Storm Water Management Program and addenda (SWMP) identifies the compliance items and schedules required by the co-permittees and Schedule B requires an annual status report on the SWMP.

SCHEDULE A

Controls and Limitations for Storm Water Discharges from Municipal Separate Storm Sewer Systems

1. The co-permittees shall maintain compliance with this permit and implement the Storm Water Management Program and addenda (SWMP) as submitted in the National Pollutant Discharge Elimination System (NPDES) permit application Parts 1 and 2 (including amendments) currently approved by the Department, and hereby incorporated into this permit by reference, in order to comply with the following conditions required by the Clean Water Act:

   a. Reduce the discharge of pollutants to the maximum extent practicable from the municipal separate storm sewer system (MS4).

   b. Effectively prohibit non-storm water discharges into the MS4 unless such discharges are otherwise permitted by an existing NPDES permit or special permit issued for short term activities pursuant to OAR 340-14-050. The following category of non-storm water discharges need not be prohibited from entering the MS4, provided appropriate control measures (if needed) to minimize the impacts of such sources, are developed under the SWMP: water line flushing; landscape irrigation; diverted stream flows; rising ground waters; uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)) to separate storm sewers; uncontaminated pumped ground water; discharges from potable water sources; foundation drains; air conditioning condensate; irrigation water; springs; water from crawl space pumps; footing drains; lawn watering; individual residential car washing; flows from riparian habitats and wetlands; dechlorinated swimming pool discharges; street wash water and discharges or flows from fire fighting activities only where such discharges or flows are identified as significant sources of pollutants to waters of the United States.

   Each co-permittee shall be deemed to be in compliance with (a) and (b) above by implementing the SWMP for the MS4s within the co-permittees' jurisdiction.

2. The Department has developed or will be developing total maximum daily loads (TMDLs) including a subsequent implementation program for several of the receiving streams listed on page 1 of this permit. The Department will enter into a memorandum of agreement (MOA) with each of the designated management agencies that describes the activities that they will complete and the time frames for completion of these tasks. The Department will utilize the MOAs in conjunction with this permit as the regulatory tool to insure compliance with the stormwater component of the TMDL program. The MOAs will establish mutually agreeable commitments for each jurisdiction. Compliance with the stormwater component of the MOA will constitute compliance with the TMDL provision of this permit.

SCHEDULE B

Minimum Monitoring and Reporting Requirements (unless otherwise approved in writing by the Department)

1. Storm Water Sampling Points

The co-permittees shall monitor storm water from the sampling points specified in the approved SWMP.

2. Storm Selection Criteria

The co-permittees shall sample storms which are representative of climatic conditions within the area served by the MS4 as specified in the approved SWMP.

3. Monitoring Frequency and Parameters to be Monitored

The frequency of sampling storms and the parameters to be analyzed shall be as specified in the approved SWMP.

4. Sampling Waiver

In the event the co-permittees are unable to collect or analyze any sample or pollutant parameter due to circumstances beyond the co-permittee's control, a written explanation of the circumstances that prevented the collection or analysis shall be submitted to the Department in the annual report. The co-permittee shall exercise due diligence in collecting and analyzing all samples as required by this Schedule. Circumstances beyond the control of the co-permittee may include abnormal climatic conditions (e.g., fewer storms in the annual reporting period than typically are representative of climatic conditions); weather conditions that make the collection or analysis of samples unsafe or impracticable (e.g., storms of such intensity that sampling would present an unreasonable safety risk); or unavoidable equipment failures caused by weather conditions or other conditions beyond the control of the co-permittee (provided that operator error is not a condition beyond the control of the co-permittee). If more than one sampling event is missed at any storm water sampling point, then re-sampling at that point will occur within twelve months of the second missed storm event.

5. Monitoring Adjustments

In the event that monitoring at an individual location or for an individual parameter is determined by the co-permittees and the Department to be unproductive, the Department will delete or change the monitoring by a permit action letter.

6. Reporting Procedures

Monitoring data shall be summarized to include concentrations of each pollutant for each monitoring site for each storm event monitored, compared to previously collected data, and reported as directed in Condition 7 of this Schedule.

7. System-Wide Report

The co-permittees shall submit by September 1, 1996, and annually thereafter a coordinated system-wide report, for the fiscal year July 1 - June 30, containing:

a. A description of the activities undertaken to implement the components of the SWMP;

b. A description of any changes made, initiated or proposed, to the SWMP;

c. A summary of data, including monitoring data required by Schedule B, that is accumulated throughout the reporting year; and

d. Any water quality improvements or degradation that have been identified.

SCHEDULE D

Special Conditions

1. Each co-permittee shall maintain, through ordinance, interagency agreement, or other means, adequate legal authority to implement and enforce the provisions of this permit.

2. Each co-permittee shall be responsible for the portion of the system-wide report applicable to their individual jurisdiction. Individual co-permittees shall not be held responsible for the noncompliance of another co-permittee with the conditions of this permit.

3. Each co-permittee shall manage storm water in accordance with the current SWMP approved by the Department. Insignificant changes to management activities as described in the approved SWMP may be made without written approval of the Department. Insignificant changes are modifications of implementation tasks within a management activity that do not change the intent or overall implementation schedule of that activity. No significant changes shall be made in storm water management activities as described in the approved SWMP without the prior written approval of the Department.

   All changes to the SWMP shall be summarized in the annual report required by Schedule B.

4. The preparation and submittal of a system-wide annual report as required by Schedule B shall be coordinated by the City of Portland.

5. Permit coverage may be terminated for a single co-permittee without terminating coverage for other co-permittees.

Appendix B

COMPLIANCE REPORTING REQUIREMENTS

COMPLIANCE REPORTING REQUIREMENTS

Compliance reporting requirements of the NPDES Stormwater Permit are as follows:

FROM SCHEDULE B:

6. **Reporting Procedures**

   Monitoring data shall be summarized to include concentrations of each pollutant for each monitoring site for each storm event monitored, compared to previously collected data, and reported as directed in Condition 7 of this Schedule.

7. **System-Wide Report**

   The co-permittees shall submit by September 1, 1996, and annually thereafter a coordinated system-wide report, for the fiscal year July 1 - June 30, containing:

   a. A description of the activities undertaken to implement the components of the SWMP (Stormwater Management Plan);

   b. A description of any changes made, initiated or proposed, to the SWMP;

   c. A summary of data, including monitoring data required by Schedule B, that is accumulated throughout the reporting year; and

   d. Any water quality improvements or degradation that have been identified.

FROM SCHEDULE D:

Special Conditions

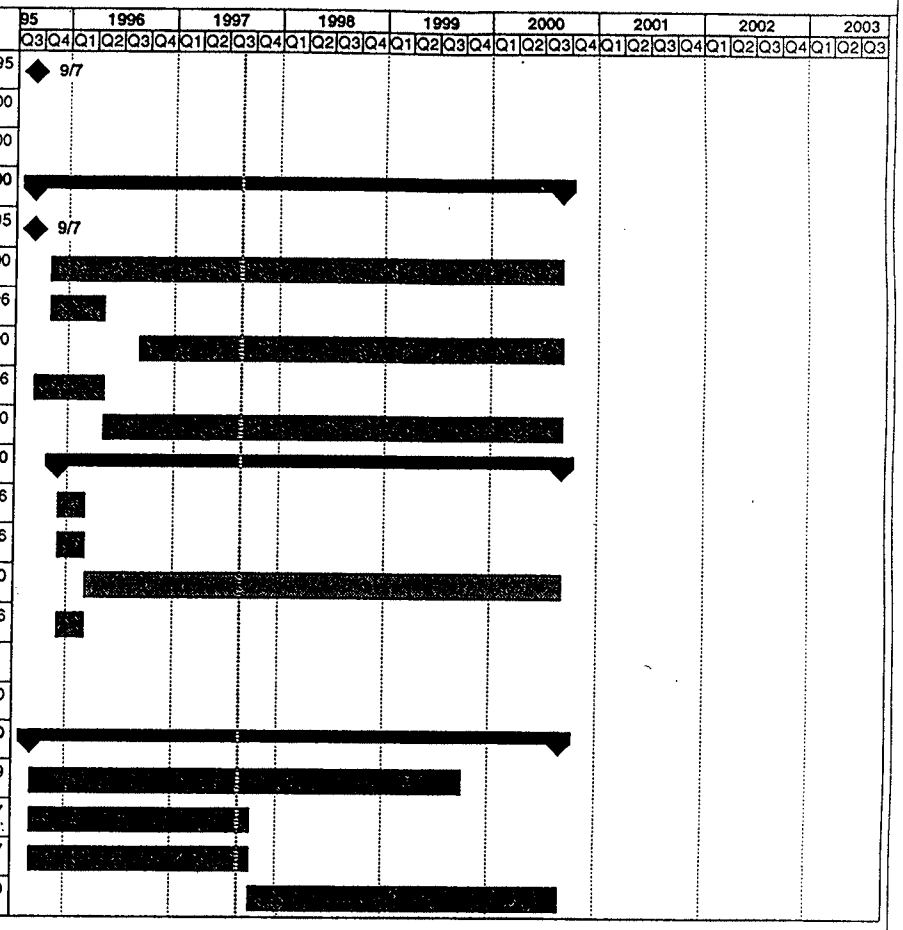
2. Each co-permittee shall be responsible for the portion of the system-wide report applicable to their individual jurisdiction. Individual co-permittees shall not be held responsible for the noncompliance of another co-permittee with the conditions of this permit.

Appendix C

PERMIT SCHEDULE REQUIREMENTS (CITY OF PORTLAND)

Implementation Schedule for Portland NPDES Stormwater Program

ID	Task Name	Start	Finish
1	PERMIT ISSUED	9/7/95	9/7/95
2	BEST MANAGEMENT PRACTICES	9/7/95	8/31/00
3	PUBLIC EDUCATION & INVOLVEMENT	9/7/95	8/31/00
4	PI1. Develop comprehensive public participation program	9/7/95	8/31/00
5	Task 1a. Form committee by 9/7/95	9/7/95	9/7/95
6	Task 1b. Quarterly committee meetings (1st mtg. - Nov 95)	11/1/95	8/31/00
7	Task 2a. Draft public involvement plan	11/1/95	5/1/96
8	Task 2b. Implement public involvement plan	9/2/96	8/31/00
9	Task 3a. Evaluate effectiveness; develop evaluation plan	9/8/95	5/1/96
10	Task 3b. Implement plan	5/1/96	8/31/00
11	ED1. Develop comprehensive education program	12/1/95	8/31/00
12	Task 1a. Convene education task group to verify/assess needs	12/1/95	3/1/96
13	Task 1b. Draft education plan	12/1/95	3/1/96
14	Task 1c. Implement education plan	3/4/96	8/31/00
15	Task 2. Draft public information plan	12/1/95	3/1/96
16			
17	OPERATIONS & MAINTENANCE	9/7/95	8/31/00
18	OM1. Develop O&M plan for structural controls	9/7/95	8/31/00
19	Task 1. Inventory the existing structural public water quality facilities	9/7/95	9/30/99
20	Task 2. Develop O&M plan for existing & future water quality facilities	9/7/95	9/30/97
21	Task 3a. Evaluate existing maintenance practices	9/7/95	9/30/97
22	Task 3b. Modify practices as needed to improve water quality	10/1/97	8/31/00



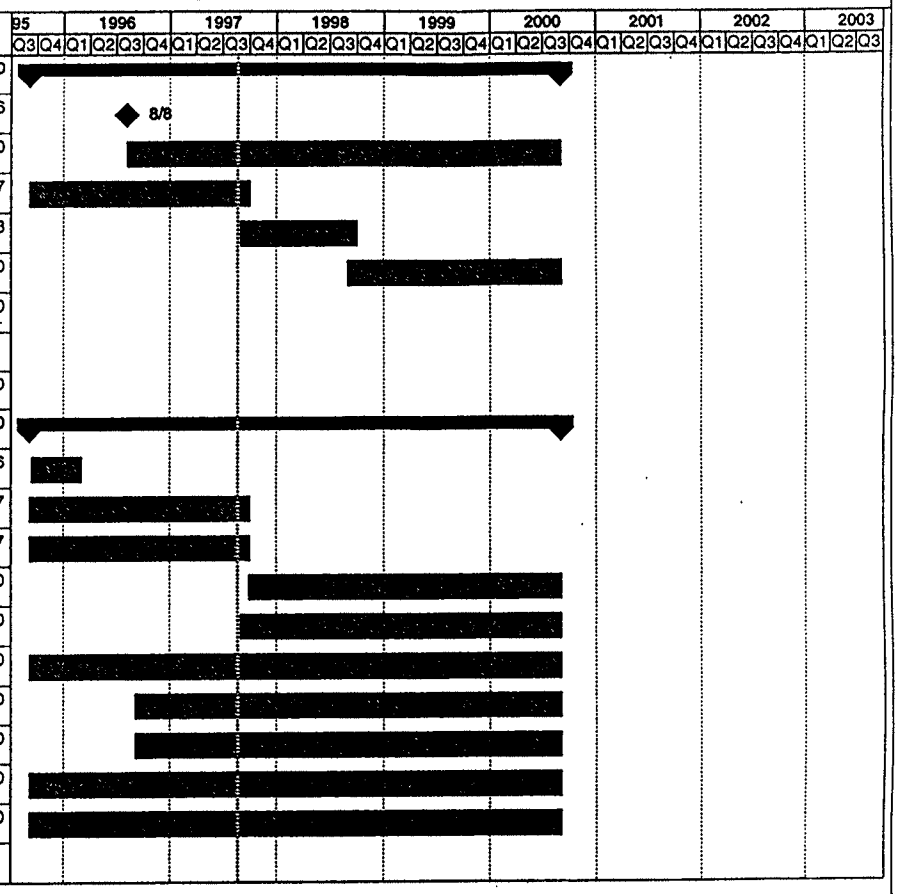
Project: Portland NPDES
Date: 8/21/97

Task Implementation ▬ Milestone ◆ BMP Implementation ▼▬▼

Note: This schedule shows regulatory compliance start/end dates only, as required by the orig. permit schedule and modified by 4-3-96 authorization letter from DEQ. However, many activities began in advance of the NPDES permit effective date of 9-7-95.

Implementation Schedule for Portland NPDES Stormwater Program

ID	Task Name	Start	Finish
23	**OM2. Evaluate O&M activities for public rights-of-way**	9/7/95	8/31/00
24	Task 1a. Organize & establish advisory committee	8/8/96	8/8/96
25	Task 1b. Committee meetings	8/8/96	8/31/00
26	Task 2. Prepare work plan of improvements	9/7/95	9/30/97
27	Task 3a. Present the completed work plan to agencies	9/1/97	9/30/98
28	Task 3b. Update the work plan (annually beginning 8/30/98)	9/1/98	8/31/00
29	Task 4. Affected agencies implement appropriate procedures and practices from work plan	9/1/98	8/31/00
30			
31	**INDUSTRIAL/COMMERCIAL CONTROLS**	9/7/95	8/31/00
32	**IND1. Control discharges from industries & solid waste facilities**	9/7/95	8/31/00
33	Task 1. Negotiate Memo of Understanding w/ DEQ	9/13/95	3/1/96
34	Task 2. Develop IGAs with co-permittees	9/7/95	9/30/97
35	Task 3. Preparation for Phase 1 of Ind. SW Control Program	9/7/95	9/30/97
36	Task 4. Implement Ind. SW Control Program (Phase 1)	9/30/97	8/31/00
37	Task 5. Conduct ongoing update of industrial files	9/1/97	8/31/00
38	Task 6. Share information and enhance coordination activities	9/7/95	8/31/00
39	Task 7a. Evaluate monitoring/control needs for landfills & other haz waste facilities	9/6/96	8/31/00
40	Task 7b. Develop plan to prioritize, monitor, control such facilities	9/6/96	8/31/00
41	Task 8a. Evaluate need for "housekeeping practices" materials	9/7/95	8/31/00
42	Task 8b. Develop/distribute materials as needed	9/7/95	8/31/00
43			



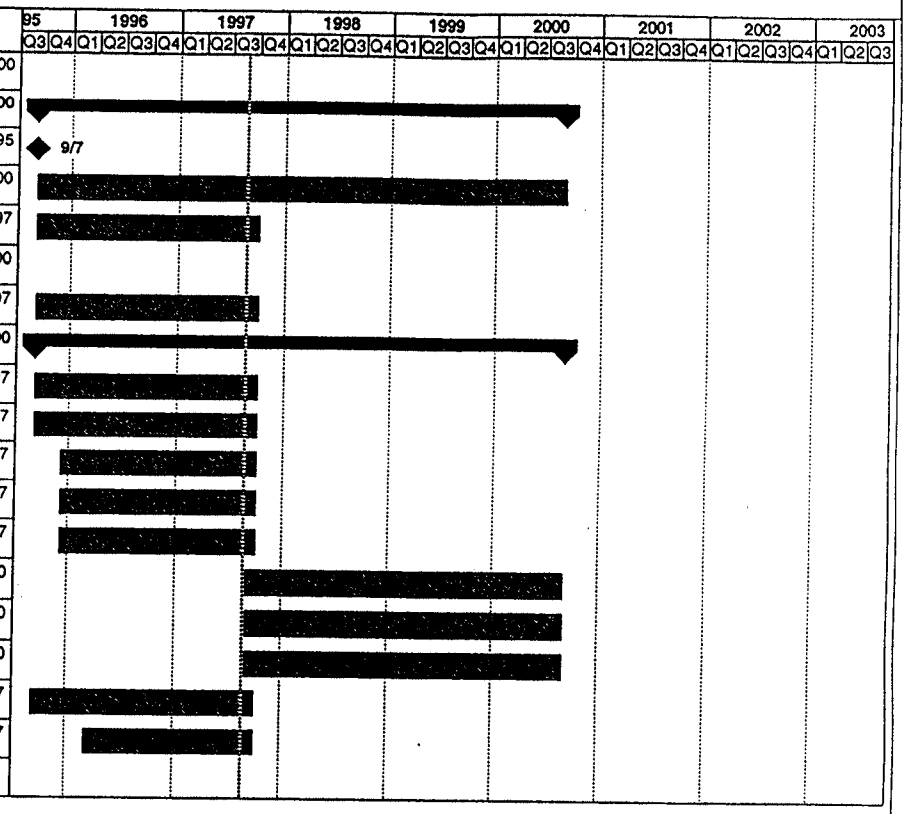
Project: Portland NPDES
Date: 8/21/97

Task Implementation ▬ Milestone ◆ BMP Implementation ▼▬▼

Note: This schedule shows regulatory compliance start/end dates only, as required by the orig. permit schedule and modified by 4-3-96 authorization letter from DEQ. However, many activities began in advance of the NPDES permit effective date of 9-7-95.

Implementation Schedule for Portland NPDES Stormwater Program

ID	Task Name	Start	Finish
44	**ILLICIT DISCHARGES CONTROL**	9/7/95	8/31/00
45	**ILL1. Spill prevention and response program**	9/7/95	8/31/00
46	Task 1a. Establish interagency committee on spill control	9/7/95	9/7/95
47	Task 1b. Regular committee meetings	9/7/95	8/31/00
48	Task 2. Prepare work plan to integrate groundwater & surface water quality activities	9/7/95	9/30/97
49	Task 3. Implement work plan	9/1/97	8/31/00
50	Task 4. Establish coordination between City & co-permittees for existing spill response program	9/7/95	9/30/97
51	**ILL2. Prevent, search for, detect, and control illicit discharges**	9/7/95	8/31/00
52	Task 1. Conduct initial tasks to prepare for field investigation work	9/7/95	9/30/97
53	Task 2. Develop IGAs with co-permittees	9/7/95	9/30/97
54	Task 3. Develop outfall prioritization plan for City & affected co-permitees	12/7/95	9/30/97
55	Task 4a. Develop schedule; finalize procedures for connection verification program	12/7/95	9/30/97
56	Task 4b. Implement training	12/8/95	9/30/97
57	Task 5. Conduct connection verification program	9/1/97	8/31/00
58	Task 6. Conduct dry weather outfall program	9/1/97	8/31/00
59	Task 7. Conduct pollutant discharge investigation activities	9/1/97	8/31/00
60	Task 8. Analyze existing plan, review connection procedures, and recommend improvements	9/8/95	9/30/97
61	Task 9. Evaluate EPA's list of non-stormwater discharges	3/7/96	9/30/97
62			



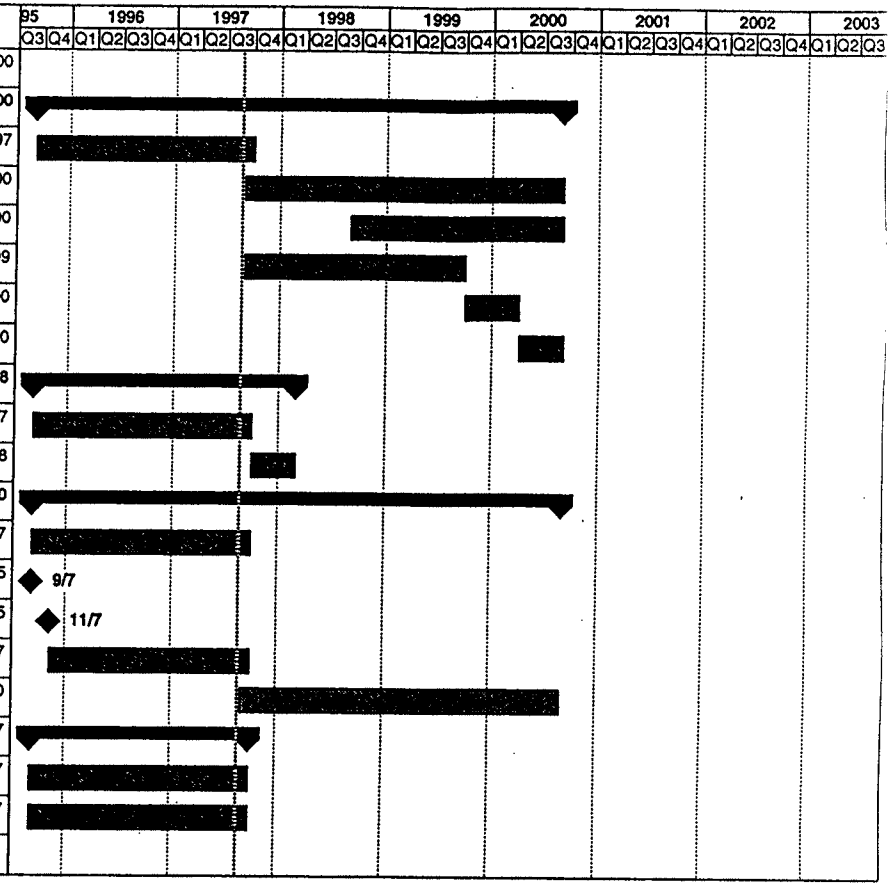
Project: Portland NPDES
Date: 8/21/97

Task Implementation ▬ Milestone ◆ BMP Implementation ▬

Note: This schedule shows regulatory compliance start/end dates only, as required by the orig. permit schedule and modified by 4-3-96 authorization letter from DEQ. However, many activities began in advance of the NPDES permit effective date of 9-7-95.

Implementation Schedule for Portland NPDES Stormwater Program

ID	Task Name	Start	Finish
63	NEW DEVELOPMENT STANDARDS	9/7/95	8/31/00
64	ND2. Work with land owners & public agencies to control pollutants from unregulated sites	9/7/95	8/31/00
65	Task 1. Develop program to educate & train City staff	9/7/95	9/30/97
66	Task 2a. Trained City staff will assist property owners	9/1/97	8/31/00
67	Task 2b. Annual refresher training for City staff	9/1/98	8/31/00
68	Task 3. Evaluate volunteer efforts	9/1/97	9/30/99
69	Task 4. Develop new program (if needed)	10/1/99	4/1/00
70	Task 5. Implement new program	4/3/00	8/31/00
71	ND3. Improve NEPA project review process to address water quality	9/7/95	2/28/98
72	Task 1. Review existing NEPA review process; recommend refinements	9/7/95	9/30/97
73	Task 2. Implement NEPA process refinements as necessary	10/1/97	2/28/98
74	ND4. Comprehensive control program for construction sites	9/7/95	8/31/00
75	Task 1. Seek input from interested groups to identify needs & recommend action	9/7/95	9/30/97
76	Task 2a. Assemble evaluation team	9/7/95	9/7/95
77	Task 2b. First meeting to define scope, schedule, assignments	11/7/95	11/7/95
78	Task 3. Prepare program plan to control construction site discharges	11/8/95	9/30/97
79	Task 4. Implement program	9/1/97	8/31/00
80	ND5. Water quality requirements for new & redevelopment projects	9/7/95	9/30/97
81	Task 1. Develop requirements and apply citywide (utilize STR4 group)	9/7/95	9/30/97
82	Task 2. Prepare and approve City code changes	9/7/95	9/30/97
83			



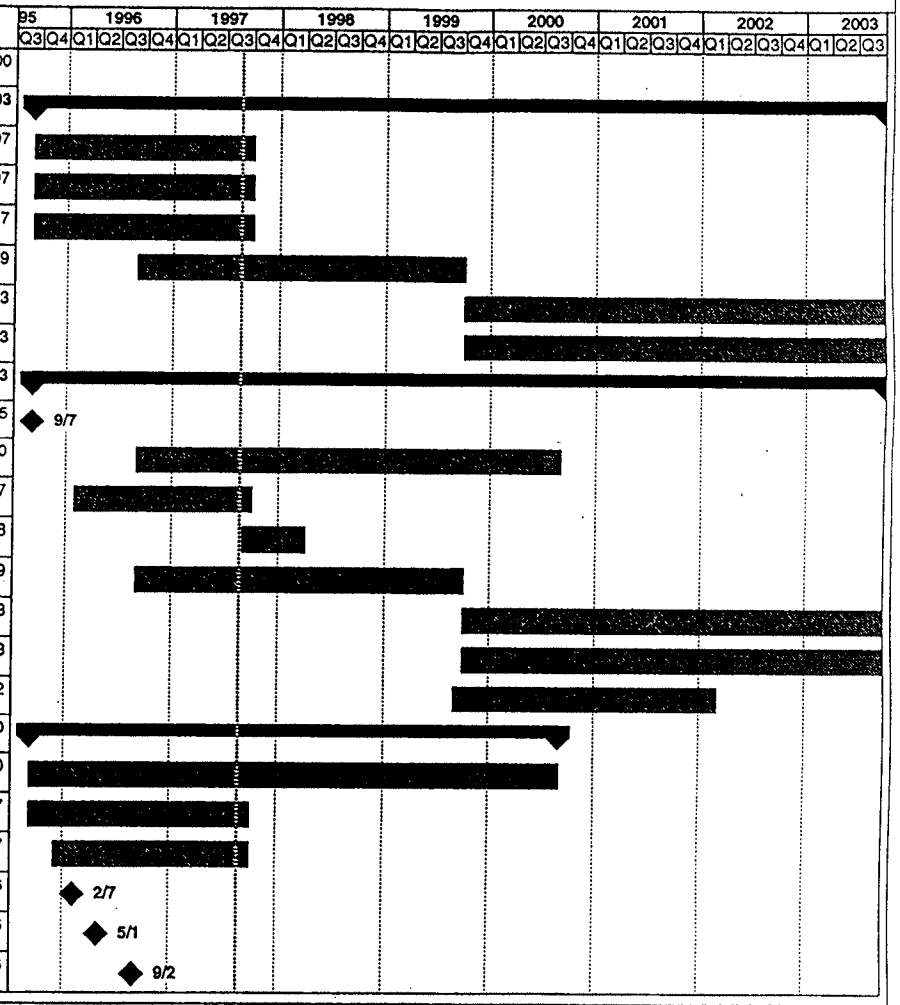
Project: Portland NPDES
Date: 8/21/97

Task Implementation ▬ Milestone ◆ BMP Implementation ▼▬▼

Note: This schedule shows regulatory compliance [illegible]

Implementation Schedule for Portland NPDES Stormwater Program

ID	Task Name	Start	Finish
84	**STRUCTURAL CONTROLS**	9/7/95	8/31/00
85	**STR1. Evaluate need for new stormwater treatment facilities**	9/7/95	9/30/03
86	Task 1a. Compile/correlate NPDES data with watershed/CSO studies	9/7/95	9/30/97
87	Task 1b. Prepare map & report of proposed/potential projects	9/7/95	9/30/97
88	Task 2. For areas not covered by any programs, prioritize/select projects	9/7/95	9/30/97
89	Task 3a-c. Design process for proposed facilities (end product: constr docs)	9/2/96	9/30/99
90	Task 3d-e. Construction	10/1/99	9/30/03
91	Task 3f-g. Maintenance/monitoring	10/1/99	9/30/03
92	**STR2. Retrofit drainage and flood control facilities**	9/7/95	9/30/03
93	Task 1a. Prepare stormwater announcement/fact sheet	9/7/95	9/7/95
94	Task 1b. Annual fact sheet updates	9/2/96	8/31/00
95	Task 2. Identify and map all existing/proposed flood control facilities	2/1/96	9/30/97
96	Task 3. Prepare master list of facilities most appropriate for retrofitting	9/1/97	4/1/98
97	Task 4a-c. Design process for proposed facilities (end product: constr docs)	9/2/96	9/30/99
98	Task 4d-e. Construction	10/1/99	9/30/03
99	Task 4f-g. Maintenance & monitoring	10/1/99	9/30/03
100	Task 5. Identify additional priority retrofitting projects	9/1/99	3/1/02
101	**STR3. Tree planting program**	9/7/95	8/31/00
102	Task 1. Research/document water quality benefits of trees/vegetation	9/7/95	8/31/00
103	Task 2. Develop list of groups who have interest in trees.	9/7/95	9/30/97
104	Task 3. Prepare/distribute questionnaire to interested parties	12/1/95	9/30/97
105	Task 4. Tree management program work session	2/7/96	2/7/96
106	Task 5a. Develop alternative strategies for City council	5/1/96	5/1/96
107	Task 5b. Seek authorization to fund comprehensive plan development	9/2/96	9/2/96



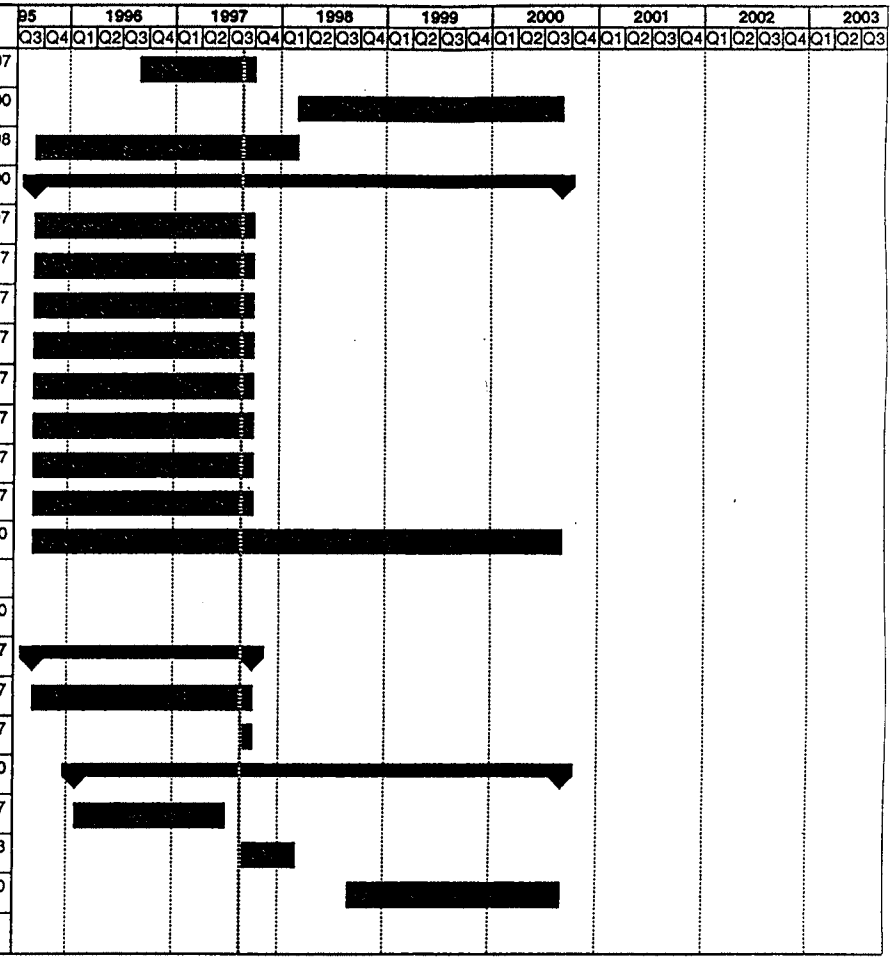
Project: Portland NPDES
Date: 8/21/97

Task Implementation ▬ Milestone ◆ BMP Implementation ▼▬▼

Note: This schedule shows regulatory compliance start/end dates only, as required by the orig. permit schedule and modified by 4-3-96 authorization letter from DEQ. However, many activities began in advance of the NPDES permit effective date of 9-7-95.

Implementation Schedule for Portland NPDES Stormwater Program

ID	Task Name	Start	Finish
108	Task 6a. Develop comprehensive Tree Management Program	9/2/96	9/30/97
109	Task 6b. Implement program	3/2/98	8/31/00
110	Task 7. Continue current tree planting practices	9/7/95	3/1/98
111	**STR4. Design standards for flood control & water quality facilities**	9/7/95	8/31/00
112	Task 1a. Compile drainage & flood design manuals/references	9/7/95	9/30/97
113	Tasl 1b. Identify stakeholders/organize review group	9/7/95	9/30/97
114	Task 1c. Prepare work plan to address issues	9/7/95	9/30/97
115	Task 1d. Address issues/correct or modify practices as needed	9/7/95	9/30/97
116	Task 2a. Determine new water quality design standards	9/7/95	9/30/97
117	Task 2b. Develop revised Water Quality Handbook	9/7/95	9/30/97
118	Task 2c. Coordinate new criteria with SRAC (Stormwater Rate Advisory Committee)	9/7/95	9/30/97
119	Task 3. Prepare and approve City code changes as needed	9/7/95	9/30/97
120	Task 4. Research/test new water quality techniques	9/7/95	8/31/00
121			
122	PLANNING/SYSTEM PRESERVATION AND DEVELOPMENT	9/7/95	8/31/00
123	**PS1. Modify landscape requirements to reduce pesticide use**	9/7/95	9/30/97
124	Task 1. Review design standards & make recommendations to BOP	9/7/95	9/30/97
125	Task 2. Revise code and/or design requirements	9/1/97	9/30/97
126	**PS2. Financial incentives for protection of natural areas**	2/1/96	8/31/00
127	Task 1. Research and report on programs in other areas	2/1/96	6/30/97
128	Task 2a. Develop incentive program if feasible	9/1/97	3/1/98
129	Task 2b. Implement program if feasible	9/1/98	8/31/00
130			



Project: Portland NPDES
Date: 8/21/97

Task Implementation — Milestone — BMP Implementation

Note: This schedule shows regulatory compliance start/end dates only, as required by the orig. permit schedule and modified by 4-3-96 authorization letter from DEQ. However, many activities began in advance of the NPDES permit effective date of 9-7-95.

Oregon

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

July 17, 1996

DAVE KLIEWER
PORTLAND STORMWATER
PROGRAM MANAGER
1120 SW FIFTH AVE
ROOM 400
PORTLAND OR 97204

RE: RESPONSE TO CURRENT AND PROPOSED
STORMWATER IMPLEMENTATION EFFORTS
MS4 PERMIT #101314

Dear Dave:

Thank you for your May 3 and May 7, 1996, submittal of the City of Portland's present and proposed status of the MS4 permit, and associated Summary Baseline Report. These two correspondences clearly summarize just how far the City has come in developing the MS4 program over the past three years. Since I have worked closely with the Industrial Source Control and Illicit Connection (IDEP) programs , and have been asked to be a part of the City's Stormwater Policy Advisory Committee, I can attest in part to the effort the City has made in reducing pollution in stormwater runoff. The work performed by the Industrial Source Control and IDEP programs to date have been exemplary.

You request, in the May 3 correspondence, that the Department grant an extension for completion of the City's BMP Management Plan until September 1997, with some specified BMP completion actually extended until September of 1999. You justify this extension based on a variety of issues, including but not limited to; the controversial nature of some BMPs, the inherent difficulty in coordinating with the co-permittees and city bureaus, the delay in permit issuance, policy changes, etc.

The Department understands the logistical and financial difficulties involved in implementing the Portland MS4 permit. We are willing to allow some flexible in scheduling BMP implementation changes within the five year life of the permit. However it is very important to show significant progress towards meeting BMPs implementation commitments within this permit period so that task completion for all BMPs is reached by the fifth year. Efforts shown during each year must be reflected in the annual report, any lack of effort detected in these reports related to BMP implementation will be addressed by the Department in writing.

Thus your BMP implementation changes and its associated justification must be described in the annual reports for the city and co-permittees. It is our job to determine whether you are meeting incremental commitments needed to fulfill

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471

the BMP goals as stated in your Part II permit. We are concerned that implementation delays will accumulate in subsequent years to the point where you will be unable to meet your implementation commitment in the final years of your permit. Delaying BMP implementation obviously results in continuing pollution discharges beyond what was anticipated in the permit.

Thank you for your concern regarding this matter and best of luck with compilation of your first annual report.

Sincerely,

Paul Keiran

PAUL KEIRAN
PORTLAND MS4 PROJECT MANAGER

PRK:prk

Cc: Tom Liptan, BES

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

1120 SW Fifth Avenue, Room 400, Portland, Oregon 97204-1972 (503) 823-7740, FAX (503) 823-6995 Dean Marriott, Director

April 23, 1996

Paul Keiran
Stormwater Specialist
DEQ, NW Region

Subject: Portland NPDES Stormwater Permit #101314

Dear Paul,

It is my understanding that over the past several months Tom Liptan has mentioned some new ideas pertaining to the City's permit. As you know, many of the conditions existing in 1993 have changed dramatically and as such have affected the city's approach to the permit program. During this time, the city has proactively completed many stormwater activities in advance of permit issuance. With this letter, I want to provide you with our proposed approach to enhance the city's implementation of the SWMP (Stormwater Management Program). Additionally, this letter, may help address concerns about the NPDES Stormwater Permit, General Conditions, Section D. Reporting Requirements, 3. Compliance Schedule.

Current status of the stormwater implementation efforts;

As mentioned above, the City has been implementing many aspects of the SWMP since submitting our Part 2 application on May 17, 1993. These efforts have included the following work, which primarily occurred between May 1993 and September 1995 (date of Portland permit issuance): Illicit Discharge Elimination Program (ILL2); Spill Response Program (ILL1); Industrial Program (IND1); Urban Forestry Plan (STR3); Operations and Maintenance manual (OM1); Surfacewater Water Quality Design Handbook (STR4); and Storm Event Sampling, including an Event History Report for four storms. All of these activities are ahead of predicted schedule in the 1993 permit application.

Additional SWMP activities being addressed by the City include; public participation, new development design and construction, structural and flood control, nonstormwater discharges, and the increasingly complicated coordination efforts with city bureaus, co-permittees, public officials, the public and others. The following issues have significantly impaired our ability to address these elements of the SWMP in the manner and schedule as originally submitted:

- Delays from the application submittal in May 1993 to the permit issuance in September 1995, hindered efficient implementation and coordination with other agencies, bureaus and City Council. Some BMPs, i.e. ND5 and ND4 are sufficiently complicated and controversial that our originally estimated time for completion can not be achieved.

- BES, although identified as the lead agency does not have unilateral authority over other bureaus or co-permittees and as such, at a minimum must coordinate issues, i.e. permit compliance letters, with 15 city bureaus, 6 co-permittees and often City Council.

- Lack of consistency with schedules in other NPDES stormwater municipal programs in Oregon.

- The City stormwater program efforts have been complicated by the fact that the CSO program is so closely related to stormwater issues and especially because EPA did not, and still has not, provided an effective means or guidance for a city such as Portland to coordinate CSO and stormwater programs. Consequently, the city is working it out as we go.

- Changes have occurred in policy, stakeholders and many city and co-permittee staff positions, which require that we educate implementing staff and City council members to stormwater issues. Coincidentally staff and organizational changes have ocurred at DEQ as well.

Proposed approach to enhance the City's implementation of the SWMP:

We have determined that to best address the most controversial BMPs and to assure public participation, we need more flexibility in our schedule and more time for coordinating efforts. We request your consideration of this proposal. An adjustment of all completion dates and corresponding implementation dates pertaining to City of Portland Management Plan BMPs to September 1997, except for the following BMPs; ND2 tasks 3-5, STR1 task 3, STR2 tasks 4 & 5, OM1 task 1. All of these exceptions would be completed by September 1999. A detailed account of the specific actions and achievements will be provided with our first annual report to be submitted September 1996. Stormwater monitoring will be more tailored to providing information about how and how much the SWMP should be applied in certain areas of the city. A proposed approach will be submitted with the annual report.

Many new technical and educational ideas have come to our attention which are not specifically addressed in our permit BMPs or EMPs. It is our intention to continue proactively persuing these ideas and finding more cost effective ways to improve stormwater quality.

Please respond to this request as soon as possible to help us better plan our next efforts. Thank you for your attention to the stormwater program.

Sincerely

Dave Kliewer
Portland Stormwater Program Manager

cc. DEQ NW Region, Neil Mullane; City Bureau Directors and NPDES Representatives; Portland NPDES Co-permittees; Portland City Council; Portland Environmental Services, Dean Marriott, Cathryn Collis, Stormwater Team.