CITY OF PORTLAND
ENVIRONMENTAL SERVICES

1211 SW Fifth Avenue, Room 800, Portland, Oregon 97204-3713 (503) 823-7740, FAX (503) 823-6995 Dean Marriott, Director

August 31, 1999

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. 4*. This report fulfills reporting requirements for the City of Portland's NPDES Municipal Separate Storm Sewer Discharge Permit. It covers the work accomplished during the fourth fiscal year of the permit program (July 1, 1998 through June 30, 1999).

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. As approved by DEQ on August 24, 1999, we will delay submittal of that report until October 31, 1999, so additional data analyses can be included.

As we move into permit year 4, we will continue many of our current program activities, as well as initiate some new elements. We will also continue to integrate our activities with the requirements and goals of the Endangered Species Act (ESA). In addition, we will be preparing for permit re-application by evaluating the program to date and identifying possible modifications. We look forward to working with DEQ in these important efforts.

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

Sincerely,

Patrice Mango
Portland Stormwater Program Manager

cc: Dave Kliewer
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. 4

Fiscal Year 1998-99
(July 1, 1998 - June 30, 1999)

Prepared for:

Oregon Department of Environmental Quality

August 31, 1999

Submitted by:

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

City of Portland

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

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

ANNUAL COMPLIANCE REPORT
Fiscal Year 1998-99
(July 1, 1998 - June 30, 1999)

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), and Schedule D (Special Conditions) of that permit. We certify, as required by 40 CFR Section 122.22, under penalty of law, that this document and all attachments were 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

OREGON DEPARTMENT OF TRANSPORTATION
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
MUNICIPAL STORMWATER SYSTEM ANNUAL REPORT
AUGUST 1999

We the undersigned hereby submit this National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater System Annual Report in accordance with the NPDES Permit Numbers:

- Portland NPDES Permit #108015
- Clackamas County NPDES Permit #108016
- Unified Sewerage Agency NPDES Permit #101309
- City of Gresham NPDES Permit #101315
- City of Eugene NPDES Permit #101244
- City of Salem NPDES #108919

We certify under penalty of law that this document and all attachments were prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel gathered and evaluated the information submitted. Based on our inquiry of the person or persons who manage the system, or those who are directly responsible for the gathering of 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.

Doug Tindall
State Maintenance Engineer

Sue Chase
Salmon Recovery Program Manager

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

This fourth 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 fourth fiscal year (July 1, 1998 through June 30, 1999) of the permit program.

The report is submitted by the City of Portland and its six co-permittees: the Oregon Department of Transportation (ODOT), Multnomah County, Multnomah County Drainage District No. 1, Peninsula Drainage District No. 1, Peninsula Drainage District No. 2, and the Port of Portland.

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

The City of Portland continued to make good progress toward meeting its permit requirements and stormwater program goals in fiscal year 1998-99. Key activities and accomplishments are summarized below.

- Completed and implemented the Stormwater Management Manual, with input from the Stormwater Policy Advisory Committee (SPAC) and a Technical Advisory Team. The manual identifies requirements for stormwater management for new development and redevelopment within the City of Portland. Refinement of the manual and involvement of a new policy advisory committee are continuing into permit year 5.

- Revised City code to implement the new stormwater management standards for new and redevelopment and to eliminate conflicts with Bureau of Buildings code.

- Completed a public review draft of the revised *Erosion Control Manual* and revisions to City code to implement improved erosion control and construction site pollution prevention measures.

- Implemented the approved revisions to the Stormwater Monitoring Program, emphasizing BMP monitoring. The monitoring program's focus has shifted from a land use-based approach to an approach based on best management practices.

- Completed Integrated Watershed Plans for the major watersheds (Columbia Slough, Johnson Creek, Willamette, and Tryon). Integrated Watershed

Planning stresses comprehensive, multi-objective watershed management along geographical boundaries, coordinating with the various jurisdictional and public interests within those areas. Water quality improvement and protection are critical objectives in establishing watershed priorities. Stormwater Program activities in permit year 5 will be implemented on a watershed-by-watershed basis.

- In March 1998, the National Marine Fisheries Service (NMFS) listed steelhead trout as a threatened species under the Endangered Species Act (ESA). As part of the City's response, the Stormwater Program is coordinating with City Endangered Species Act Program to integrate Stormwater Program activities with ESA goals. During permit year 5, BMPs will be evaluated for fisheries impacts as part of permit renewal activities.

- Closed out and evaluated the Parkrose Area Pilot Project. BES's increasing focus on Integrated Watershed Plans has decreased the need for testing/pilot projects. With increased knowledge of watershed-specific issues, concepts can be tested throughout the City rather than be confined to one location.

- 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?* video and completion and distribution of a second video project; outreach to nontraditional audiences, 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 by managers and elected officials.

Multnomah County implemented the permit year 4 BMP activities according to the Stormwater Management Plan (SWMP). Key accomplishments are outlined in Section III of this Annual Report, and include several new achievements.

Permit Year 4 focussed on more specialized erosion prevention and sediment control training, providing separate programs for new development and right-of-way inspectors on the one hand, and for road construction project managers and inspectors on the other hand. 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, elected officials, consultants, and the National Marine Fisheries Service to discuss the important interrelationship of the ESA with other water quality improvement programs.

Staff involvement was greatly enhanced and received this year with several new innovative projects, particularly by the Road Maintenance functional group. That group initiated discussions about better erosion control methods for routine operations, found an alternative way to repair roadways without using sanding material (for crack sealing), tested new products for spill adsorption to reduce the need for sand or kitty litter during cleanup operation, 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.

PORT OF PORTLAND

The Port of Portland owns or manages approximately 9,700 acres within the City of Portland Urban Services Boundary. The Port implemented numerous programs this year related to stormwater quality improvement, as summarized below and discussed in more detail in section IV of this Annual Report.

A new Deicing and Anti-Icing Runoff Control Program was instituted in the 1997-98 deicing season. The program is a combination of strategies to control, collect, and dispose of deicing and anti-icing materials over the next 4-5 years, until the long-term solution is implemented. The Deicing NPDES Permit, which became final on March 12, 1999, also requires implementation of a number of specific best management practices. Compliance shall be required on the schedule set forth in the total maximum daily load (TMDL) for the Columbia Slough and the Deicing NPDES permit, which requires deicing stormwater discharges to the slough to be in compliance with the numeric waste load allocations by the winter of 2003-2004. Meanwhile, PDX deicing issues continue to be addressed by Port environmental staff, a consultant team, the co-permittees, DEQ, BES, and other regional committees.

Specific operating area training efforts have been initiated, implemented, or maintained during the 1998/1999 permit year, including an airport-specific stormwater awareness training video, spill response training, and training for procedures on specific waste and materials handling. In addition, a BMP Steering Committee, comprised of the Port and PDX tenants has been meeting regularly and working to develop and implement airport-wide BMPs. The Marine Tenant Program incorporates training sessions with tenant employees regarding BMP development and implementation. These meetings include discussion of applicable regulations, review of current practices, and an information-sharing session. Portland Ship Yard continues to conduct employee training, including environmental awareness courses for supervisors and managers. The Port continues to participate with the City and other co-permittees in stormwater meetings, and the Port Tenant Program continues to develop.

The Port actively coordinates with other government agencies on water quality protection activities relevant to Port properties and activities, including regional and municipal committees and DEQ technical advisory committees. The Port participates in numerous public participation forums and professional organizations, including the Columbia Slough Watershed Council, the Willamette Restoration Initiative, the Association of Clean Water Agencies, and the Columbia Corridor Association.

To comply with the existing municipal stormwater NPDES permit and the new slough TMDLs, as well as to assist with slough revitalization, Port staff have been working with BES for over a year to identify practical joint Columbia Slough revitalization efforts, including revegetation of Port property along the Columbia Slough and adjacent sloughs, and cost sharing on water quality monitoring.

Numerous stormwater controls and BMPs have been implemented at the Port operating areas in accordance with their SWPCP schedules and requirements of the municipal stormwater program. For example, the following BMPs have been implemented throughout the past permit year:

<u>PDX</u>

- Dewatering permit sampling and management practices finalized, and permit in effect
- Deicing NPDES permit approved; outfall monitoring and BMPs in effect
- Erosion control training information distributed
- Erosion control training meetings conducted
- Tenant BMP committee formed and meetings conducted regularly

Industrial Parks

- Added two catch basins to yearly cleaning and inspection schedule
- Cooperated in the revegetation of large areas along the Columbia Slough

Portland Ship Yard

- Attended environmental training courses for managers and supervisors
- Installed new catch basin inserts
- Continued frequent yard sweeping and cleanup
- Conducted dry season inspections

Marine Terminals

- Developed catch basin inspection policy - expanding number of catch basins inspected
- Reduced mowing and chemical applications by landscaping with native species
- Installed spill procedure labels into T-6 large equipment

Tenant Properties

The chief goal of the Port Stormwater Tenant Program is to address stormwater BMP implementation with all Port tenants that have the potential to impact Port stormwater quality. The tenant survey and tenant meetings have been conducted and are the first vital steps in the Program. Tenant facilities are periodically inspected during Port "walk-throughs" to ensure compliance with stormwater requirements.

Monitoring

The Port has been meeting with the City to discuss cost sharing for in-slough monitoring required by the municipal NPDES permit, and cost sharing for in-stream monitoring required by the slough TMDLs. Under the proposed agreement for the municipal permit, all of the seven municipal NPDES co-permittees will contribute funds to BES, and BES will perform most of the actual stormwater monitoring. The proposed TMDL monitoring agreement calls for BES to perform the instream monitoring, and the Port will continue to monitor its own outfalls. While all seven co-permittees will share in the cost of TMDL in-stream monitoring, the Port will pay 89 percent of the costs for deicing investigations.

OREGON DEPARTMENT OF TRANSPORTATION (ODOT)

ODOT currently participates on six NPDES Municipal Separated Storm Sewer System (MS4) permits. The lead agencies holding these permits are the City of Portland, City of Eugene, Unified Sewerage Agency, City of Gresham,

Clackamas County, and City of Salem. ODOT participates with 24 local municipal agencies as a co-permittee on these six MS4 permits.

Listed below are the major programs and goals required by these ODOT MS4 permits, and ODOT activities that have been implemented (1998-1999) to comply with them.

The goal of the **Operations and Maintenance (O&M)** requirement is to evaluate and modify, as appropriate, current practices to reduce impacts of highway maintenance activities on receiving water, and adopt policies and procedures that reduce amounts of pollutants discharged to the system. Two major accomplishments were:

- Renegotiated "ODOT Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices" with the National Marine Fisheries Service (NMFS). Revised the document to meet Endangered Species Act concerns.

- Worked with the Oregon Department of Fish and Wildlife (ODFW), NMFS, the Division of State Lands, and the Army Corps of Engineers to clarify ditch maintenance permit requirements.

The NPDES permit requires a comprehensive **Public Education and Involvement Program**, with the goal of increasing awareness of pollutants in stormwater runoff and explaining permit conditions and requirements. Two major accomplishments in permit year 1998-1999 were:

- Hosted classes on fish passage, culverts, erosion control, and the Clean Water Act.

- Presented the video "Road to Recovery: Transportation Related Activities and the Impacts on Salmon" and discussed water quality issues at the Washington Roads and Streets Supervisors Conference, APWA Conference, Street Supervisors Conference, Marion County Public Works Conference, and the Oregon County Street Supervisors Conference.

The goal of the **Illicit Discharge Control** requirements is to develop and implement a program to detect, investigate, and eliminate illicit discharges to the ODOT storm sewer system. Major accomplishments included:

- Performed 19 ODOT construction site erosion control assessments and made recommendations for improvement as appropriate.

- Continued to negotiate an agreement with DEQ to define agency roles and develop an illicit discharge response proposal. The response proposal

outlines a consistent statewide method for researching and documenting illicit discharges at the ODOT District level.

The goal of the **New and Development Standards** category is to develop and define standard practices for new construction to ensure compliance with the permit. Two major accomplishments were:

- Convened a Technical Advisory Committee to develop protocol and policies in developing permanent stormwater facilities.

- Hired a consultant and completely revised the ODOT Erosion Control Manual.

The goal of the **Structural Control** category is to ensure stormwater treatment standards are effective in pollutant removal. Two major accomplishments were:

- Formed ODOT/DEQ MS4 steering committee to identify appropriate stormwater treatment and mitigation for ODOT projects statewide (including stormwater treatment goals and priorities).

- Initiated Stream Team Technical Advisory Committee and Leadership Team to work on developing agency policy and design standards for bank stabilization.

The goal of **Planning/System Preservation and Development** is to ensure that planning efforts encompass long-term solutions to reduce pollutant loading. Major accomplishments included:

- Continued to define specific vegetation management issues to each ODOT District through Integrated Vegetation Management (IVM) program.

- Investigated innovative techniques for vegetation management, such as grazing goats on ODOT right-of-way, using heat treatment to control vegetation, etc.

The NPDES requires an **Inventory** of ODOT's storm drain system that lists all major outfalls (over 36 inches) within the NPDES permit boundary. ODOT owns 20 outfalls in the Portland permit area and one in the Eugene area. Two major accomplishments were:

- Developed an outfall inventory work plan for NPDES MS4 Phase II requirements, and started field-checking outfalls.

- Started to incorporate inventory efforts into the work of other ODOT units (Mapping, Maintenance, and Geo-Hydro).

The NPDES requires an ongoing **Monitoring Program** to characterize stormwater within the permitted system, detect pollutants, and assess the effectiveness of control measures and/or BMPs employed to reduce these pollutants. Two major accomplishments were:

- Continued with street waste research project monitoring. Monitoring work includes sample collection from pilot projects: flocculent, field decant station, filter box, compost, constructed berm, and the mobile settling pond projects. Final report expected by spring 2000.

- Partnered with consultants to research retrofit options for waste management disposal units in ODOT facilities.

The NPDES program is adaptive in nature, and ODOT will continue its commitment to develop and expand the program to the maximum extent practicable. ODOT is currently working with DEQ to develop an ODOT-specific statewide NPDES permit. The new permit will meet the current MS4 and Clean Water Act requirements, as well as incorporate ODOT statewide efforts to comply with the Endangered Species Act. As part of permit renewal, ODOT will evaluate the annual reporting needs, structure, and tasks of the current program and propose necessary changes to the existing reporting and monitoring requirements. In the new permit, ODOT will establish a reporting date that coincides with the reporting date of the Oregon Plan for Salmon and Watersheds to improve agency efficiency.

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

MCDD#1 continues as the contracted manager of Peninsula Districts 1 and 2, and this summary covers the activities of all three Districts during permit year 4. The full report is found in section VI of this Annual Report.

The compliance activities of this year fell into three broad categories:

- Maintaining ground gained in basic compliance and enforcement

- Completing upgrades of District and private systems to improve overall effectiveness in complying with the permit

- Beginning work on longer-term programs that will realize major environmental improvements in the Columbia Slough watershed

Program Accomplishments

Compliance and Enforcement: The District has continued a major effort to review all new development plans in the watershed for compliance with erosion control, stormwater management, and all other aspects of the MS4 permit. As a result of District review, developers have increased usage of open drainage systems, with associated environmental enhancements, as opposed to traditional (piped) design approaches. The District also carefully reviews the adequacy of their proposed design regarding other aspects of the stormwater collection and treatment system. In cases where a design issue may be outside the technical expertise of the District (e.g., a particular water quality treatment technique), the District works with other review agencies to assist with resolving the problem. During construction of a development, the District checks for proper erosion control measures on the construction site and adequacy of the permanent stormwater facilities. During the past year, the District placed considerable pressure on a developer who was not following acceptable erosion control practices, including recovery of costs for restoration. This was an unusual, extreme case. Typically, the District succeeds in working with developers early in their design and construction work stages, and the developers appreciate understanding requirements and options at a stage of their process when changes can be handled efficiently.

All District operations and maintenance activities include compliance with the MS4 permit as a top priority. Waterborne maintenance is the method of choice, and every effort is made to avoid equipment maneuvering on waterway banks to minimize the potential for sedimentation. The maintenance of a large system of drainageways and levees necessarily involves filling of slumped areas and other activities where soil is exposed. The District places highest priority on conducting these activities in a manner that demonstrates to the general public the best possible example in operation, erosion control, and effective replanting.

Upgrading District And Private Systems: During this year, the District completed the major capital improvements that were discussed in the Annual Reports of the past two years. Several pump stations were completely overhauled and updated, and major sections of the levees were rebuilt. The requirements of the MS4 permit were a key goal in all of these projects, both during construction and in the operational capabilities of the completed projects. For example, a new telemetry system will provide monitoring of water flow in the Columbia Slough from multiple locations—a substantial data collection improvement that will increase understanding of the natural environment of the

slough. The levee improvement projects stabilized bank areas that were damaged in recent storms or high-water events, or replaced inadequate fill material with proper soils. The improved levee integrity increases safety and protects against bank slides into the waterway.

The District influenced a number of private developers over the past year to improve compliance with the MS4 permit through enhancing the natural environment. In one example, the developer is widening an existing drainage ditch and constructing new 'benches' on the sides of the ditch to provide emergent wetland habitat. Elsewhere on this same site, the developer is re-establishing a wetland area that was lost to farming decades ago. The District worked with this property owner to produce this site plan as the most effective use of the property for stormwater management, environmental compliance, and attractiveness of the site to prospective tenants.

Long-Term Environmental Improvements: All compliance activities under the MS4 permit are intended to improve the natural environment of the Columbia Slough each year the permit is in force and into the longer-term future. During this fourth year of the current permit, the District has invested time and funding in several projects that are producing important information today and will improve the watershed in the future.

The leading example of this work is a "General Investigation" study, sponsored by the Corps of Engineers, which is investigating the feasibility of improving habitat and water quality through creation of a meandering channel in the Columbia Slough with adjacent areas of emergent wetlands and riparian habitat. BES is the local sponsor, and the District is a project partner. The District is providing expertise on the slough, resources to support site visits, and funding for sediment analysis and permit preparation. Many other agencies and groups are participating in direct and advisory roles. While physical construction of this project is years into the future, the project is producing considerable data and analysis of the in-stream and riparian conditions along the slough that are useful for many other purposes.

The District has taken the lead in developing a pilot project of the meandering channel concept that is fully permitted and will begin construction in fall of this year. The Bridgeton Slough will be dredged by the District using a barge-mounted excavator. The bottom soils will be placed along the banks of the slough to form habitat 'benches' at different elevations. BES will plant the benches with appropriate vegetation. This project has attracted considerable interest from resource agencies, and the adjacent community associations are participating. The experience gained in the Bridgeton Slough will benefit the project design for the main channel of the Columbia Slough. The planning of the

Bridgeton project, permit applications, meetings with neighborhood associations and similar work was supported and/or conducted by the District during the past year of operations under the current MS4 permit.

Other projects with longer-term benefits include evaluation of macrophyte growth in the Columbia Slough and evaluation of test plots of different seed mixes for levee planting. As with all other programs of this type, the District works with stakeholders who would be affected by the project, and the District provides leadership or team support as required to make progress on the issue.

Section I

GENERAL INTRODUCTION

GENERAL INTRODUCTION

This fourth 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). (See Appendix A.) It covers the work accomplished during the fourth fiscal year (July 1, 1998 through June 30, 1999) of the permit program.

The report is submitted by the City of Portland and its six co-permittees: the Oregon Department of Transportation (ODOT), Multnomah County, Multnomah County Drainage District No. 1, Peninsula Drainage District No. 1, Peninsula Drainage District No. 2, and the Port of Portland.

The Oregon Department of Transportation is in the process of obtaining a statewide NPDES stormwater permit. ODOT anticipates permit issuance in late 1999 or early 2000. As a result, ODOT will not be a co-permittee during permit year five.

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.

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 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
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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, Multnomah County, and ODOT 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.

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, Buildings, 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 fourth annual report covers the period from July 1, 1998 through June 30, 1999. It includes activities that are a continuation of third-year activities. It does not repeat activities that were completed in year 3 (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 VI**--The individual compliance reports of the co-permittees, describing implementation actions taken, program status, and any initiated or proposed program changes.

- **Section VII: Portland NPDES Fourth Annual Stormwater Monitoring Compliance Report**

- **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

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City of Portland
INTRODUCTION

This fourth Annual Compliance Report for the City of Portland documents activities that occurred during the fourth fiscal year (July 1, 1998 through June 30, 1999) of the permit program and evaluates the status of the Stormwater Program. Key accomplishments for FY 98-99 include:

- Adoption of the *Stormwater Management Manual* and revisions to City Code, implementing stormwater management standards for new development and redevelopment.

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

- Implementation of the approved revisions to the Stormwater Monitoring Program, emphasizing BMP monitoring.

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.

Organization/Coordination within the City

To coordinate Stormwater Program activities within the City, the Bureau Representatives Group (formerly the technical advisory committee, or TAC) meets on an as-needed basis. The Bureau Representatives Group meetings provide a forum for regular communication among bureaus to plan and ensure NPDES permit

compliance. This group will meet more frequently during permit year 5 to help develop the permit renewal and revisions to the Stormwater Management Plan.

In addition, Stormwater Program activities are being coordinated with the City's Sustainable Portland Commission. The Commission was appointed by the Mayor to evaluate the City's internal environmental management practices and ensure consistency with policies and programs that promote resource conservation and environmental protection.

Program Approach

BES's Stormwater Program Manager is responsible for overall project management, compliance reporting, policy development, and coordination within the City of Portland. BES undertook a bureau-wide, function-based reorganization during year 2 of the NPDES permit period. All bureau project planning was centralized within the Systems Development Group (renamed the Planning Group in permit year 4) and organized by watershed to enhance project coordination. Stormwater Program activities in permit year 5 will be implemented under BES's Integrated Watershed Planning (IWP) approach. Integrated watershed plans for the major watersheds (Columbia Slough, Johnson Creek, Willamette, and Fanno/Tryon) were completed with input from Stormwater Program staff during permit year 4.

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.

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 and the development, calibration, and execution of hydraulic and pollutant models for existing conditions were completed during permit year 3. Using this data, 48 potential sites were identified in permit year 4 for green solution implementation. The high-priority sites will be evaluated for technical feasibility in permit year 5.

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 will be 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 will also integrate and institutionalize elements of the IWP effort.

Watershed Programs

During FY 98-99, 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 the latter part of permit year 3 and into year 4, BES implemented 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 FY 98-99, 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. That program provided $35,000 in FY98-99 grants 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) listing of steelhead trout as a threatened species under the Endangered Species Act (ESA) on March 13, 1998, and by the passage of Metro's Stream and Floodplain Protection Plan (Title 3).

The ESA listing applies 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 integrate closely with ESA goals by implementing BMPs that will mitigate stormwater quantity impacts and improve water quality. In permit year 4, the Stormwater Program began coordination with City ESA staff on program activities related to fish impacts.

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 $590,000 annually through year 4 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 River Correctional Institute Wetland Project).

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. These programs are primarily financed by City stormwater drainage fees. In some cases, these are directly provided by monthly rates and stormwater development charges; in other cases, such as capital projects, they are bond-financed, to be paid back later through monthly fees.

City Council approved revised stormwater monthly fees and stormwater system development charges (SDC) at the start of permit year 4. Monthly fees were adjusted to reflect operating, maintenance, and capital costs of the City's sanitary sewer and drainage system. The rate adjustments were based upon cost of service principles, ensuring equity by charging ratepayers according to the amount of sewer and drainage service they use. Monthly rates increased from $3.26 to $3.66 per 1,000 square feet of impervious surface, which translates to an increase from $7.82 to $8.78 per single-family residence per month.

Formerly based on impervious area, the methodology for assessing system development charges for new development and significant redevelopment was revised to include two components. One component represents the charge for stormwater facilities that handle runoff from individual properties. This onsite portion is assessed based on $100 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 is assessed based on the use of the transportation system, using road frontage ($0.99 per linear foot) and vehicle trips ($0.38 per vehicle trip) to allocate the costs.

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.

An evaluation and revision of system development charges for year 5 was also completed in year 4. The year 5 rates will increase to $110.59 per 1,000 square feet of impervious area, $1.09 per linear foot of road frontage, and $0.44 per vehicle trip.

Some Stormwater Program 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 has been extended; permit year 5 will be 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, 13 acres of land in frequently flooded areas were purchased in permit year 4.

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 3,589 homes from discharging to combined sewers in permit year 4. 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 seven times that amount in volunteer and in-kind services from organizations, schools, and citizens for water quality projects.

- 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, and Metro.

- The Willamette River Predesign Project created a "green solutions" subtask to integrate innovative stormwater treatment and management approaches into stormwater separation for part of the combined sewer system. These approaches use passive pollutant removal systems prior to discharge or infiltration.

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 4. This section describes the year's activities and notes any significant changes/improvements from year 3. It also compares how actual year 4 activities compare with projected year 4 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 needed to the NPDES permit.

- Projected major accomplishments for next fiscal year (1999-2000).

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* 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 4 (FY 98-99)

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 eleven 4-hour workshops, with 262 participants. The workshops encompassed all Portland watersheds: Columbia Slough, Johnson Creek, Tryon Creek, Balch Creek, and Willamette River. In addition, 99 participants attended 8 follow-up mini-workshops and tours.

- Disseminated information and messages through a wide variety of venues, reaching thousands of citizens. Thirty-three staffed booths and/or presentations reached 3,050 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 10,000 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

- Distributed 435 spray bottles with Clean River recipes on the label, along with accompanying brochures. Students assisted with this distribution to Madison High School students, the Asian Vicariate and Asian Family Center, the Clara Vista low-income housing units (with a primarily Hispanic population), and through a northeast Portland event called "Good in the Hood."

- Conducted the Parkrose Area Pilot Project door-to-door survey, a follow-up to the survey done 4 years ago. The Delta Sigma Theta Sorority Inc., a service group of African-American women, conducted the survey. Five or six of the women were over 60 years of age.

- Used over 650 volunteers, representing 82 community organizations from North and Northeast Portland (Columbia Slough watershed) to assist in disconnecting 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.

- Completed the development and filming of the *Clean Rivers: Why Should I Care?* Volume II video project ("Leo's Wake Up Call"). This included hiring a production company; recruiting and hiring talented teenage students to act and assist in the script writing; developing environmental workshops that included speakers from varying cultural and scientific backgrounds; and shooting the footage. This is a complex project with challenging logistics and scheduling. Produced 200 videos, of which 58 have been distributed to date; school distribution will occur in fall 1999.

- Developed and conducted the premiere for the *Clean Rivers: Why Should I Care?* (Volume II) video. Hundreds of formal invitations were mailed, and 100 individuals attended, including guest speakers and performers.

- Developed the *Discovery Packet*, an activity packet to accompany the video, for use by teachers.

- Used three students who participated in the video project to assist with the spray bottle distribution project mentioned above.

Stormwater Education Activities

- Reached approximately 20,000 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*

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

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

  - Festivals: *Stormwater Obstacle Course*

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

- Provided checkout of stormdrain stenciling materials to the community, resulting in 425 volunteers stenciling 1,700 stormdrains.

- Checked out curriculum kits to Portland teachers; the kids include books, suggested science activities, and the *Clean Rivers: Why Should I Care?* videos.

- Used 300 high school and middle school students to participate in the Downspout Disconnection program (managing stormwater onsite), after attending classes that used math, science, and language arts curriculum.

Stewardship Grant Projects

- Provided stewardship grants to:

- Environmental Middle School for bare-root native vegetation to be distributed for local Naturescaping projects.

- Two Rivers Montessori School and parent group for Naturescaping of school property and providing better alternatives to channeling water on the property.

- Green City Data, in partnership with Portsmouth Middle School, to conduct a tree survey in a North Portland neighborhood to identify where trees were needed.

- Madison High School, working with Rose City Golf Course, to conduct a Naturescaping 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 to run in June and July 1999. This included printed ads in regional newspapers, a version translated into Spanish for a regional Hispanic newspaper, and "teasers" for regional movie theaters. Packets of brochures were available to those who called a "hot line" for more information.

Publications

- Discontinued the Mainstream stormwater newsletter.

- Published two Clean River Tips postcards that were mailed to the Parkrose Area Pilot Project mailing list of 600. In addition, several hundred more were printed and distributed throughout all Portland watersheds.

- 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 3

None

Comparison with Projected Accomplishments

The projected accomplishments for fiscal year 1998-99 identified in the third annual compliance report (September 1, 1998) were achieved, with the following exceptions:

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

- Comprehensive media/public information plan: This fiscal year, the bureau focused on the Regional Coalition media and Endangered Species messages.

- "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 99-00 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

EMP (B)(5)

". . . 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.

- Expanded the bulky waste door-to-door collection program into a 2-year $300,000 contract with a non-profit community-based neighborhood coalition. In permit year 4, 5,527 homes participated.

EMP (A)(6)

"...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

Budget reductions present staffing and other constraints for public education and involvement. There is also a challenge to collaborate on stormwater and Endangered Species messages.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

None requested.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Develop the non-residential element of the *Naturescaping for Clean Rivers* Program.

- Work with the Regional Arts and Culture Council (RACC) to plan and implement a visual arts stormwater activity/event.

- 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 4 (FY 98-99)

Accomplishments

- The BES Sewer Maintenance Group reorganized to create a designated surface water staff person to help improve the response to surface and stormwater facility condition assessment and maintenance needs.

- Continued to revise the Wastewater Collection Management System database to the MAXIMO system to track maintenance efforts and conditions of facilities; created the Storm and Sanitary Quality Assurance Clearinghouse (SaSQUACH) system to help convert this information into usable GIS information.

- Completed construction and began operation of a second dewatering facility for vactor wastes. The new facility has double the capacity to dewater solids from sumps, inlets, and catch basins.

- Completed the operations and maintenance requirements section of the Stormwater Management Manual for all new water quality facilities, both public and private (see ND5).

- Completed an initial system knowledge survey for watershed managers to assess watershed-specific operations and maintenance plan needs.

- Completed a facility monitoring and evaluation "wish list." Will work in permit year 5 to build a comprehensive monitoring and evaluation plan from this list.

- Began discussions of combining the research, testing, and evaluation components of OM1 and OM2, since similar City staff work on both efforts. Conversations to date have helped improve the coordination of evaluation efforts.

Significant Changes/Improvements from Year 3

The BES Sewer Maintenance Group has been developing service level standards for all stormwater and sanitary related facilities. Once completed, these service standards will state BES's intended maintenance schedule for its facilities and will provide a strong basis for increasing funding for maintenance activities. The standards should be completed early in year 5.

Comparison with Projected Accomplishments

- Work to evaluate the level of O&M needed for water quality is continuing. Efforts in this permit year were confined to identifying activities for an evaluation plan and starting research on a host of materials and products. No direct pilot testing of individual maintenance practices occurred this permit year.

- Work is still continuing on watershed-specific O&M plans. From the initial surveys, creation of system-specific maps and identification of sensitive areas will be used to generate regional, or subregional, maintenance plan revisions.

- Completion of a secondary assessment pass on sediment manholes and sump facilities, and creation of a facility maintenance workplan, will be carried over into permit year 5.

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

EMP (A)(1)

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

EMP (B)(7)

"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 186 inlets, 1,840 feet of inlet lead, 360 sumps, 367 culverts, and 13 trash racks.

- Cleaned approximately 930 sumps, 16,650 catch basins, 11 detention ponds, 1 swale, 42,790 feet of ditch; cleaned 15,950 trash racks; made 6,520 maintenance visits to various locations (multiple visits to some locations after major rain events).

- Repaired 7 existing cesspools within the USB.

- Multnomah County Health permitted 27 new specified animal permits and responded to 106 animal waste/odor control calls.

CHALLENGES AND SOLUTIONS

As budgets shrink and new facilities are added, individual facility maintenance is beginning to occur less frequently. 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.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

A full evaluation of maintenance practices for water quality facilities has not yet taken place. The City has instead concentrated on moving to a more accurate system for identifying and implementing needed maintenance for all stormwater pollution reduction and conveyance facilities. The City requests a modification to the permit to shift to a program stressing appropriate and adequate

maintenance efforts for the life system of the facility, with subtler efforts aimed at activity evaluations of practices for water quality.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Complete evaluation of combining OM1 and OM2 testing and evaluation efforts under one BMP.

- 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.

- Start design of a third sump dewatering pad.

- Complete materials and product research and refine the evaluation workplan for OM1 and OM2 practices. Monitor at least two products, facilities, or activities per year, as budget allows.

- Complete survey of watershed-specific maintenance activity needs and maintenance frequency, and develop into watershed-specific sections of the Stormwater Maintenance Management Manual.

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

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 4 (FY 98-99)

Accomplishments

- The process of ongoing evaluation, assessment, and revision has led to adjustments that strengthen the program: a "pollution prevention" (P2) team has been created to complement the work of the Administrative Management Team identified in the annual report for permit year 3. "Runoff management" principles have been developed and presented to field crews in an awareness training package. Runoff management kit needs have been refined to include both runoff from activities and runoff from motorized equipment used in field operations.

- Runoff management principles were developed and presented in a pilot awareness-level training program to the Environmental Systems Division's 102 employees, as well as to Bureau of Maintenance (BOM) managers and supervisors and seven members of the BOM Pollution Prevention (P2) Team.

- Components have been tested for runoff management and leak containment kits. This process has resulted in eliminating several unrealistic products and practices, while focusing further study on other products that show potential value in meeting water quality goals.

- BOM has selected an alternative asphalt-releasing agent, eliminating use of petroleum-based releasing agents in paving operations.

- BOM is taking steps toward establishing a stable/sustainable environmental and water-quality focus in management of operations. This process includes

creating a new engineering position to coordinate water quality and other environmental issues within BOM.

Significant Changes/Improvements from Year 3

The primary focus of this year's work was building a base for a sustainable program. Activities included restructuring the Pollution Prevention Team, presenting awareness training to Environmental Systems Division and management employees, pilot-testing ideas, and creating a new environmental engineer position.

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 workplan.

Compliance Status

In compliance.

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 shift desired, sometimes competing, objectives within the snow and ice control program. The City continues to work to balance TSS and BOD issues. BOM continues to work with ODOT and the Federal Highway Administration (FHWA) to balance transportation and environmental needs.

- The Bureau continues work with experimental plantings, using an integrated vegetation management (IVM) approach and requiring certification of pesticide applicators.

CHALLENGES AND SOLUTIONS

Operation and maintenance of public rights-of-way continues to be faced with the challenge of providing basic urban services in an era of decreasing revenues, increasing costs, and additional responsibilities for environmental factors, including reducing impacts to local waterways.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

No modification to the permit is anticipated.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- The Administrative Management team will continue to monitor the runoff management program and pilot projects, and will continue to provide a bridge between field operations and management.
- The P2 team will be involved in pilot testing of materials and activities, ongoing monitoring, evaluation and revision of activities, and presenting results to appropriate work groups for implementation.
- Annual revision and updating of the OM2 evaluation and workplan will be completed after the Bureau's new environmental engineer is hired.
- The P2 team will be recruited to assist administrative managers in expanding awareness training to field employees who have not yet received the training.
- An environmental skill-training curriculum will be developed and tested within the Environmental Systems Division.
- Testing and implementation of runoff management kits will expand to field operations within the Environmental Systems Division.
- Work will continue to coordinate efforts to meet ESA, Clean Water Act (CWA), and other environmental needs, and to integrate these needs into vision of basic functions.

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 4 (FY 98-99)

Accomplishments

- Inspected, sampled, and administered the permits for 101 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. Identified seven industries required to obtain stormwater permits.

- Continued to implement improvements to the Aquarius database 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.

- Reviewed 237 industrial information surveys done as part of the City's pretreatment program. From the responses to various stormwater-related questions, determined 155 facilities posed no risk to the MS4. The remaining 82 facilities are under further review.

- Collected and analyzed 124 stormwater samples from 85 permitted facilities. (See the Monitoring Compliance Report at the end of this Annual Compliance Report for more information).

- The City's ISCD is participating in a dental technical assistance program in partnership with the Oregon Dental Association and the Multnomah, Washington, and Clackamas County Dental Societies. The program will initially focus on removing and recycling mercury form the waste stream. A memorandum of agreement has been completed on how the program will operate and the roles of all parties.

- The City's BEST Program assisted industries with "green practices," saving water and energy and dealing with stormwater and solid waste. In FY 1998-99, seven businesses were recognized for their efforts in these areas. Since the program started in 1992, 49 area businesses have won awards for projects/ practices that are saving them over $10.3 million per year. In all, these businesses made the following reductions:

  - 37.2 million kWh of electricity saved
  - 6.6 million Therms of natural gas saved
  - 687,000 gallons of gasoline saved
  - 379 million gallons of water saved
  - 60,900 tons of solid waste reduced
  - 9.4 million miles (VMT) avoided
  - 93,700 tons of CO_2 emissions eliminated

- In 1998, BES's Pollution Prevention Program's fourth Annual Pollution Prevention Recognition Awards were presented to seven individual, teams, and public/private partnerships that have demonstrated environmental enhancement, economic viability, and information sharing. These award recipients voluntarily prevented discharges of solid waste, wastewater, and stormwater through innovative management and technological changes.

- Updated the 13 BMP handouts on preventing stormwater pollution from industrial activities.

- The Integrated Watershed Planning effort is integrating stormwater permitting issues and opportunities into workplans for each of the City's watershed programs. This effort should work to incorporate industrial stormwater control citywide, including the CSO Program Area.

- Updated the Implementation Manual for the Industrial Stormwater Program.

- Developed a variety of industrial-related BMPs as part of the Stormwater Management Manual (see ND5).

- Continued work with the Multnomah County Sanitarians to control pollutant discharges from restaurants, including oil and grease.

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

- Developed a BMP for certain classes of washwater generated by mobile cleaners. Ran a limited outreach program for mobile washers. Coordinated with and obtained information from the Interagency Regulatory Analysis Committee (IRAC) in Washington State and others on programs addressing mobile cleaners.

Significant Changes/Improvements from Year 3

- Developed a brochure on "Controlling Pollutants and Sediments in Dewatering Discharges" and a letter of authorization for discharges allowed to the MS4.

- Purchased a stormwater pollution prevention training video for use by industry when conducting employee training.

- Added two new BMP handouts: "Employee Training" and "Identifying and Eliminating Illicit Discharges."

- Developed a "No Exposure Certification" that requires industries to notify the City if conditions on their sites change in such a manner that industrial activities are exposed to rainfall and stormwater runoff.

- The regional Pollution Prevention Outreach (P2O) Team continued its technical assistance partnerships with local automotive facilities. In addition, a sticker recognition program was formally instituted, with the certification of five automotive service facilities. The automotive program is operated with the guidance of a technical assistance team that includes members from AAA, OSPRIG, two local trade groups (PATA and ASA), and a member from each of the seven P2O jurisdictions.

Comparison with Projected Accomplishments

Projected activities were completed, with the following exception:

- Performed a cursory review of City Code 17.39 during the preparation of the Stormwater Management Manual. Noted some possible changes, which will be reviewed in permit year 5.

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:

- Reviewed SARA Title III facility plans.

- Remediation is underway in the East Multnomah County Project, 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

The Integrated Watershed Plan effort will help provide citywide consistency and coverage by the Industrial Stormwater Program. Staffing and other resource concerns are the primary remaining challenge of expanding the program to provide a more in-depth citywide effort.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The automotive brochure listed as an EMP in the 1993 permit application has been revised into a multi-media Ecological Business, Automotive Pilot Project.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Continue to inspect all permitted industries discharging to the MS4 once per year, and conduct sampling as needed. (There are currently approximately 100 permitted industries).

- Continue to inspect non-permitted industries discharging to the MS4 to evaluate the need for permits (approximately 100-200 per year).

- Continue to track all permitted discharges to the MS4--for example, cooling water, boiler blowdown, and groundwater remediation.

- Incorporate stormwater issues into commercial inspections performed by the BES Solid Waste and Recycling staff.

- Strengthen Pollution Prevention Program and Prevention Activities, including the expansion of the Environmental Assistance Program partnership between Portland businesses, BES, and DEQ.

- 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, including the 8 City fleet facilities, by the end of permit year 5.

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

- Develop a brochure on controlling pollutants and limiting impacts to the MS4 from sawcut slurry.

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 4 (FY 98-99)

Accomplishments

- Continued to meet quarterly and update the workbook of the Regional Spill Committee.
- Added another permanent member from the Port if Portland to the Regional Spill Committee.
- Equipped spill response vans with absorbent materials in order to enhance response to spills that impact water bodies.
- Completed a comprehensive outfall map, and partially completed an outfall book, to assist in spill response and outfall identification on the Willamette River and the Columbia Slough. The map includes City-owned and some private industrial, stormwater, and combined sewer outfalls. Maps and books have been distributed to various Regional Spill Committee members and some regional private response companies.
- Created an outline for a spill training curriculum.
- Resubmitted plans to the Water Bureau Property Management Group to install a simple spill training area adjacent to the Fire Bureau Training Center on NE 122nd.
- Continued to enhance the duty officer training program.

- Continued a GIS database and mapping project in the Water Bureau to log sites related to hazardous materials use, documented chemical releases, etc. This system will eventually also include groundwater monitoring data.

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

Significant Changes/Improvements from Year 3

- Included a series of industrial and spill control BMPs in the Stormwater Management Manual, which provides stormwater quality and quantity management requirements for new development and significant redevelopment (redevelopment activities on sites larger than 38,000 square feet). 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 7.5) replaces the Columbia South Shore Hazardous Containment Handbook.

- Began discussions to include neighboring municipalities in an area-wide wellhead protection program based on groundwater flow characteristics rather than street or city limit boundaries.

- Began development of a groundwater risk assessment model.

Comparison with Projected Accomplishments

- Obtained permission to use a Fire Bureau training coordinator to develop and run region-wide spill training, but awaiting approval and installation of the training facility before full program development. Still waiting for Water Bureau approval of training facility plans.

- Continued work with various agencies to form the workplan for a Sump Management Plan. This plan would 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.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

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

- Complete the spill training curriculum.

- Add a state police representative to the Regional Spill Committee.

- Begin discussions about ICS command cooperation of various agencies in the case of a spill to the Willamette River. Consider the option of scheduling a spill incident exercise for participating groups.

RELATED EMP STATUS

EMP (B)(4)

"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.

- Eliminated the Columbia South Shore Hazardous Materials Containment Handbook and replaced it with the Chapter 7, Section 7.5, of the Stormwater Management Manual.

- The Fire Bureau Hazardous Materials response team responded to approximately 200 calls in FY 1998-99.
-

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. The items listed in the Groundwater Issues white paper are being considered for inclusion in each jurisdiction's workplan.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

None

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 4 (FY 98-99)

Accomplishments

- Continued revising priority outfall list; currently tracking 111 outfalls.
- Verified connections at 111 outfalls, including onsite inspections of commercial and industrial facilities.
- Continued dry weather monitoring at all major outfalls during the summer sampling period of 1998 and sampled all priority outfalls at least twice. Average of 99 outfalls inspected during dry weather months.
- Expanded the type of pollutants sampled during dry weather monitoring.
- Used flow monitoring equipment on one outfall where slug loads and periodic dumping incidents are suspected to occur. Reports to date are inconclusive, but staff feel the flow monitor is still a valuable tool to identify illegal dumping.
- Identified and removed illicit discharges, primarily washwaters, from 12 industrial facilities that were inspected by industrial stormwater staff.
- Continued sampling on 19 non-stormwater discharges identified in the NPDES permit to determine their impact on the MS4. Air conditioning

condensate, water line, and tank flushing activities were completed in previous years. Sampling in spring 1999 included:

- Individual residential car washing
- Uncontaminated groundwater infiltration
- Uncontaminated pumped groundwater
- Diverted stream flows
- Flows from riparian habitats and wetlands

- The Spill Response Prevention (SPCR) and Citizen Response Section is coordinating efforts with the Industrial Source Control Division (ISCD) to develop a closed-loop tracking system for the identification and resolution of reported illicit discharges/illegal dumping:
  - Cases identified: Approximately 60 by sampling and 180 by complaints.
  - Cases resolved: 90 percent of sampling and 65 percent of complaints.
- Continued to implement measures to limit impacts from non-stormwater discharges related to City operations:
  - ***Fire Bureau:*** A $64 million bond will be used over the next 10 years to provide upgrades of various Fire Bureau facilities. General Services is coordinating all upgrades and design of new facilities. Proposed upgrades will consist of 9 new stations (2 new and 7 replacements) and 22 remodels. Two remodels and one new construction project will be proposed annually over the next 10-year period. An architectural/engineering firm has been hired and has begun schematic design. The first design review is expected to be in fall 1999.
  - ***Water Bureau;*** The Zonal Flushing program was approved by City Council, and the Water Bureau and BES are now working on program development and pilot project implementation. Both bureaus are working within an ESA Discharges to Waterbodies subcommittee to reduce impacts of discharges to aquatic life. The first pilot project was conducted on April 29th, 1999. BES Industrial Source Control Division and Water Bureau Operations are developing a variety of control practices in the form of BMPs and Standard Operating Procedures (SOPs) for all operations.
  - ***Bureau of Environmental Services:*** Industrial Source Control is working with the Water Pollution Control Laboratory staff to develop BMPs for onsite car washing at this satellite facility.

- ***General Services*** Industrial Source Control is starting efforts to incorporate BMPs for cleaning and maintenance of City facilities into facilities operation, construction, and activity management bid processes.

- A number of City bureaus have assigned workgroups to address sustainability issues identified in a report submitted to City Council by the Sustainable Portland Commission. Bureau-specific workplans are in various stages of development, and many are being coordinated by the Energy Office.

- Commercial and industrial building plan review will continue and be enhanced by system improvements and manual development:
  - Reviewed 165 commercial and industrial building plans.
  - The new Office Planning and Development Review (OPDR) and the TRACS project tracking system will be operational September 13th, 1999.

Significant Changes/Improvements from Year 3

Eleven BMPs were implemented as discharge control mechanisms under Chapter 7 of the BES Stormwater Management Manual:

1. Fuel Dispensing
2. Storage of Materials in Stationary Tanks
3. Solid Waste Storage Areas, Containers, and Trash Compactors
4. Storage, Use, and Transportation of Hazardous/Toxic Materials
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 Recycled Land

Comparison with Projected Accomplishments

- BES is working to integrate IDEP activities into the Integrated Watershed Planning effort.

- The Water Bureau has continued to use reporting and dechlorinating BMPs for all water line and tank cleaning activities.

- Incorporated a number of commercial and industrial use-related requirements into the Stormwater Management Manual (see ND5).

Compliance Status

In compliance with all permit dates, except for final completion of a signed IGA 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 discharge to the municipal separate storm sewer system to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm system.*"

EMP (B)(1)

"*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 Pollution Prevention Program continues to train city staff on prevention methods in their daily activities. The P2 program also offers workshops for businesses to learn self-applied environmental assistance techniques.

- 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 the following waste reduction measures:

  - Recycled 43,655 tons of material from Portland households (approximately 663 pounds annually per household)

  - Recycled 19,969 tons of yard debris (approximately 303 pounds annually per household)

  - Recycled 7,350 tons of material from multifamily complexes

  - Recycled 50,846 gallons of used oil from Portland single-family and multi-family homes.

  - Sponsored 52 neighborhood cleanups that collected 1,281 tons of solid waste, 681 tons of recyclables, and 3,353 tires. Of the recyclables, 292 tons were yard debris, 74 tons were scrap metal, 21 tons were reused by St. Vincents, and 137 appliances were culled out for reuse. These activities were funded through donations to neighborhood coalitions to coordinate 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.

  - Expanded the bulky waste door-to-door collection program into a 2-year $300,000 contract with a non-profit community-based neighborhood coalition. From 5,527 participating homes, collected 605 tons of solid waste and 1,474 tires, recycled 35 tons of metals, and reused 23 tons of appliances.

    Portions of these materials may have otherwise been illegally dumped and could have entered local water bodies.

- The City's Green Team of concerned employees instigated a number of new activities this year. The Green Team took a look at area coffee vendors with

environmental discounts and distributed findings to all City employees. The team also put together information to help City employees with recycling, archiving, and waste reduction associated with file clean-outs. The team took a trip to Owens Brockway Glass Recycling Plant to learn more about glass recycling and current co-mingling issues. It also helped set up the expanded recycling program at the Portland Building and ensured that recycling was an integral part of the new 1900 building, including a change to mini-garbage cans for all new tenants.

- Stop Oregon Litter and Vandalism (SOLV), a statewide non-profit group, retrieved approximately 33,753 pounds of material through the Oregon Adopt-a-River Program and 134,650 pounds 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

None

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

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

- Continue discussions with the Fire Bureau regarding pollutants generated at its facilities and integrating pollution prevention efforts into its facilities master planning effort.

- Continue evaluation of building-related and groundwater-related non-stormwater discharges. Implement monitoring schedule for evaluation of all non-stormwater discharges. Develop tracking report.

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

- Continue bulky waste door-to-door program on 24 Saturdays, targeting 48,000 households.

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 4 (FY 98-99)

Accomplishments:

- Stand-alone displays and handouts are available to all bureaus. One set is currently on display at the Southwest Watershed Resource Center located at the new Southwest Community Center. Another set has been on display at the Fire Bureau.

Significant Changes/Improvements from Year 3:

None

Comparison with Projected Accomplishments:

Activities have been greatly reduced because of limited staff resources. The displays are designed to meet bureaus' needs and are appropriate for display at all city bureaus, as well as for public display.

Compliance Status:

Due to lack of staff resources, the display boards have not been fully utilized this fiscal year.

RELATED EMP STATUS

EMP (iv)

CHALLENGES AND SOLUTIONS

Limited staff resources to implement this BMP has been a challenge this fiscal year. A request for assistance will be made.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

None

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Identify and provide staff support to continue the work of the BMP.
- Secure space with interested bureaus to set up displays.

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 4 (FY 98-99)

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. We are assuming this is acceptable and are therefore incorporating ND3 into ND5 for this year's Annual Report. See ND5 for all related issues.

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 4 (FY 98-99)

Accomplishments

- Completed a proposal to update the existing educational assistance tool (the Erosion Prevention and Sediment Control Plans Technical Guidance Handbook) by creating an Erosion Control Manual that has educational information plus enforceable BMP performance standards. The proposal includes adding 19 new BMPS, including 7 BMPS created to help control pollutants from construction sites.

- Modified the current administrative structure for erosion control review and enforcement to go along with the proposed new erosion control code (Title 10—see "Significant Changes/Improvements," below). The modified structure still leaves the public works bureaus to review and inspect their own projects and permit-related work, and has the Office of Planning and Development Review (OPD&R) working with all private property developments. OPD&R will also be responsible for handling a centralized complaints process and for taking the lead on working with developers/ contractors on subdivision projects where public and private system work is occurring at the same time.

- Established an inspection supervisors team to address outstanding issues generated by development of the new code. Issues include training (both for internal staff and external customers), complaint calls, pond sizing and

conversion to permanent water quality facilities, and other logistics of trying to provide enhanced consistency among groups.

- Continued operation of the Soil Trader, which posted over 1,343,000 cubic yards of soil available and 39,000 cubic yards wanted, with 34,000 cubic yards coming from the available stock.

- Continued the ongoing coordination meetings of the Erosion Control Team of inspectors from the public works bureaus (Water, Transportation, and BES) and OPD&R, which meets on a routine basis.

- Passed interim code changes to the City's grading code (24.70) to limit areas of disturbance and impose seasonal work restrictions.

Significant Changes/Improvements from Year 3

Completed a City proposal for a new erosion control code (Title 10) to be enforced by all City bureaus, including Office Of Planning and Development Review, BES, Transportation, Water, Long-Range Planning, and Parks. The draft code proposal, released for public review on 7/1/99, includes performance measures and a strict "no visible or measurable" standard of control.

Comparison with Projected Accomplishments

- Completed the first draft of revisions to the Erosion Control Manual. This draft is out for public review and will be finalized early in permit year 5.

- Prepared a revised program and code for enhanced citywide erosion control. The administration was in place by the end of FY 98/99, but the enhanced code authority and applicability standards will not be in place until November 1999.

- Currently reviewing the educational goals and needs necessary for staff and customers to implement the provisions of the new code and manual.

Compliance Status

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

RELATED EMP STATUS

EMP (D)

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

EMP (D)(1)

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

EMP(D)(2)

"...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:

- A construction site recycling program continues to operate, with over 1,200 out of 1,800 eligible sites reporting participation. This level of 67 percent reporting is an increase over permit year 3, which had a 56 percent reporting rate. Staff estimates additional sites are participating, but do not send in all their reporting forms.

CHALLENGES AND SOLUTIONS

New development issues continue to be controversial in the City of Portland, but very high-profile DEQ enforcement sites in and near the City's urban services boundary have heightened attention to erosion control practices. Recent ESA

listings of various fish species and the Metro Title 3 requirements have helped propel stricter erosion control measures and requirements to the top of environmental issues for the City to address.

Instituting construction site pollution control measures has continued to be a challenge. The current work to date has provided minimal BMPS, based on construction site activity controls, within the new erosion control code. Control of pollutants beyond the activities specified in the Erosion Control Manualwould be achieved by the measures put into place by Title 17.38 and 17.39 of the City Code. These additional measures would be some of the system protection activities specified in other sections of this annual report.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

The City continues to request a modification to the NPDES permit schedule to allow adequate time to implement the enhanced code authorities and the Erosion Control manual that are the basis for the City's Comprehensive Erosion Control Program. Good effort has been made over the last year to provide a strong citywide program proposal, demonstrating the City's commitment to enhancing its erosion control program.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Collect input from various parties and finalize the City's Erosion Control Manual. Continue to develop subcontractor-specific BMPs for educational or enforcement use.

- Pass the Title 10 code through City Council and finalize funding and staffing needs. Requirements are scheduled to take effect November 1, 1999, with some enhanced staffing or reorganization occurring in July 2000 (FY 00-01).

- Create educational and training guidance to support the provisions of Title 10.

- Develop a program with the major utility companies to control trench-dewatering discharges to the MS4.

ND5	Establish water quality requirements for new and redevelopment

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 4 (FY 98-99)

Accomplishments

- The Stormwater Policy Advisory Committee (SPAC) and Technical Advisory Team provided oversight and comment on Stormwater Management Manual drafts. The SPAC membership includes developers/builders, designers, environmental groups, citizen activists, and City and DEQ staff.

- In June 1999, the Portland City Council approved code changes to Title 17.38 and adopted the Stormwater Management Manual. The new requirements take effect July 1, 1999.

- Provided technical assistance on numerous new and redevelopment projects. As a result, the developers applied stormwater quality controls on a voluntary basis.

- Began discussion of the next Metro Stormwater Design Awards Program, likely to occur late 1999, in conjunction with Metro, DEQ, the Unified Sewerage Agency, Clackamas County, the City of Gresham, and Clark County, Washington. The program is intended to identify design approaches that support good stormwater management and urban density goals and preserve or enhance natural resources. Distributed hundreds of copies of the 1997 handbook of award winners.

- Assisted students at Portland State University and the University of Oregon working on masters programs in urban planning and landscape architecture.

- 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 3

None

Comparison with Projected Accomplishments

- Completed work on development of design criteria for new development, some redevelopment, and significant redevelopment.

- Continuing to modify City Code to coordinate with new Stormwater Management Manual policies.

- Continuing to work on improving the development review process. Have not developed the education curriculum, but have prepared and given several presentations to design and planning professionals.

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

In the latter part of the permit year, work was again started on the plan after being postponed in permit year 3. With completion of the Stormwater Management Manual, it is anticipated that the process will work better this time.

Portland International Center/Cascade Station

Revision to the existing plan district occurred during this permit year, with completion of a new approach to land use and stormwater quality management. The area is approximately 500 acres of airport property (Port of Portland). The work was a collaboration among PDC, the Port, and the City. All parking lots must be designed with swales.

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.

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 Title 34, Subdivisions

The City continues the process of rewriting Title 34 Subdivision Regulations. In response to SPAC recommendations, the draft code will be modified to require that land be identified and set aside for stormwater management prior to lot subdivision. It is anticipated that work will be completed in FY 1999-00.

City Code Chapter 33.430, Environmental Zones

Title 33 has been modified to protect environmental zones from damage resulting from stormwater discharges. Outfalls into the environmental zone are not allowed by right; proposals must go through an environmental review.

City Code Chapter 33.535, Johnson Creek

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

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 in-lieu 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

None

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- 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 the Stormwater Management Manual and modify annually as needed.

- Complete 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 4 (FY 98-99)

Accomplishments

- Completed 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.

- Completed phase 1 of Whitaker Ponds pond excavation and grading. Phase 2 (pipe and diversion work) will occur in permit year 5.

- Identified the top seven priority outfalls that may require water quality facilities.

- Completed constructed wetland with hazardous containment pond and sediment bay at NE 138th (Columbia Slough). This outfall was identified as one of the priority outfalls.

- Reappraised land for Columbia Slough pollution reduction facility at NE 148th and finished predesign. This outfall was identified as one of the priority outfalls.

- Continued estimating the seasonal pollutant loads from each of the major outfalls.

- Divided 158th/162nd project into two phases. Phase 1 consists of an upstream sediment bay and hazardous waste containment bay (on Sandy Blvd.). Design for this phase was completed. Phase 2, restoring a wetland near the Slough for water quality benefits, will occur in permit year 5.

- Began work on Johnson Creek Predesign, which will address major Johnson Creek outfalls.

- Bureau of Planning began discussions on update of the Willamette River Greenway code. BES will participate to assure that stormwater outfalls are addressed.

Significant Changes/Improvements from Year 3

None

Comparison with Projected Accomplishments

- The outfall facility at NE 138th was constructed as projected. However, constraints such as protracted property negotiations and permitting issues have altered the scope of work or delayed construction of some other facilities.

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

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 Plans will assist in this effort. In addition to providing water quality benefits, facility design must 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

None

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Continue to implement watershed facilities/resource plans that address major outfalls.
- Complete planting at NE 138th wetland facility (a priority outfall).
- Construct phase 1 (sediment and hazardous waste containment bay) of NE 158th/NE 162nd Ave. facility. Design phase 2 of this project (wetland restoration).
- Refine the Integrated Watershed Plans for the Willamette, Columbia Slough, Johnson Creek, and Tyron Creek.
- Purchase property for the NE 148th site; negotiate with the intention to purchase ($2.1 million). 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).
- Design the Buffalo Slough water quality facility (Columbia Slough).
- Assess the 1994 Johnson Creek Resource Management Plan recommendations for each major outfall.

- Complete Johnson Creek Predesign.

- In coordination with the Bureau of Planning and other bureaus, begin the update of the Willamette Greenway code. BES will be involved to ensure that stormwater outfalls are addressed as part of this effort.

- Begin 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 4 (FY 98-99)

Accomplishments

- Completed construction of the Columbia River Correctional Institute (CRCI) Wetland Project to satisfy part of the Consent Decree between the City of Portland and the Northwest Environmental Advocates (NWEA). This project removed a linear drainage ditch and rerouted the drainage through a restored wetland.

- Completed predesign work on the Stephens Creek Willamette Confluence Project. This project, also part of the NWEA settlement agreement, evaluated stormwater quality management opportunities.

- Began Johnson Creek Projects CIP predesign work.

- Began Endangered Species Act (ESA) related work on the following:

  - Planning for fish-friendly design of CSO pipe repair in Johnson Creek
  - Planning for replacement of culvert at 162nd with bridge to allow fish passage
  - Design of Willamette Esplanade, incorporating fish-friendly design elements
  - Developing the Willamette River Habitat Conservation Plan, which will address ESA issues related to stormwater outfalls

- Developing Willamette Streambank Notebook for developers

- Implemented several actions in the Johnson Creek Resource Management Plan.

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

- Completed Russell Pond retrofit predesign.

- Completed BES A&B predesign (a water quality retrofit including a swale and sand filter in the Parkrose area.

- City hired a program manager to set up a program for retrofitting existing development in the combined sewer area. The project will remove many properties and rights-of-way from the CSO system. The lessons learned from this work can be applied in the MS4.

- Worked with facilities planners, watershed managers, and O&M staff to identify opportunities to retrofit flood control facilities when there is a potential benefit to water quality.

- Completed the citywide Public Facilities Plan (PFP). The next phase will more specifically address pollutant reduction through retrofits to the MS4.

Significant Changes/Improvements from Year 3

The following summarizes changes to facilities planned for the Fanno Creek watershed:

- 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 has been modified to delete the off-channel wetland component and to focus on bank stabilization and instream restoration, in partnership with the Unified Sewerage Agency. BES will provide $300,000 for this work. Design will occur in permit year 5, with construction the following year.

- The facility at SW 58th and Hamilton has been canceled because the Division of State Lands (DSL) will not reissue the permit. The original design had flow diverted from Fanno Creek into an off-line water quality facility. ODFW was concerned that fish would be trapped. In addition, Metro has purchased

adjacent property as native upland riparian habitat, and the permitting agencies want the facility site to provide similar benefits. The City is evaluating alternative water quality approaches, such as construction of bank stabilization and stream restoration.

- The Tareen project, which primarily included rebuilding an earthen dam, has been canceled because DSL will not issue a permit.

Comparison with Projected Accomplishments

Accomplishments are close to projections.

Compliance Status

The schedule for tasks 3 and 4 will be met through the PFP process.

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

Public facilities planning is now a part of this BMP's tasks. The Public Facilities Plan identifies and prioritizes drainage improvements citywide. PFP activities in Year 5 will focus on 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 IWP. The PFP identifies and prioritizes drainage improvements citywide, and the IWP provides coordinated project planning and implementation on a watershed basis. PFP activities in Year 5 will focus on reducing pollutants in the MS4.

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 must 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

A schedule change may be needed for tasks 3 and 4 because these tasks are dependant on the PFP process.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Construct Russell Pond retrofits.
- Design and construct BES A&B, a water quality retrofit including a swale and sand filter in the Parkrose area.
- Continue Johnson Creek Predesign activities.
- Refine the PFP to more thoroughly address pollution reduction and implement projects.
- As part of permit renewal activities, evaluate positive and negative fish impacts relative to implementing this (and other) BMPs. For example, retrofits that provide water quality benefits, such as large ponds or wetlands, may increase water temperatures to the detriment of fish.
- Refine the Integrated Watershed Plans for the Willamette River, Columbia Slough, Johnson Creek, and Tryon Creek.

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 4 (FY 98-99)

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.
- Implementation of a neighborhood Tree Liaison Program is underway.
- The Urban Forestry Division continues to promote street tree plantings that provide more shade to address water quality. During permit year 4, 452 trees were planted in City parks.
- Friends of 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 4, FOT planted 1,959 trees and 25,000 tree seedlings, plus an additional 360 trees on Portland Public Schools properties.
- The Planning Bureau and Urban Forestry completed a more comprehensive tree protection and planting ordinance, which was adopted by City Council. New requirements for street tree planting in new subdivisions were also adopted.

- Under BES's Watershed Revegetation Program, volunteers and contract crews removed non-native vegetation in watersheds throughout Portland and planted over 164,000 native trees, 100,000 shrubs on 197 acres, and over 15 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.

- Completed design and initiated work on numerous stream revegetation projects.

- In spring 1999, 126 students inventoried 309 blocks and 1,831 street tree sites.

- Applied for another tree inventory grant with Portland State University and Urban Forestry.

Significant Changes/Improvements from Year 3

None

Comparison with Projected Accomplishments

- Did not conduct research on water quality benefits of trees.

- Did not review BES and other bureau specifications to find ways of adding more trees to projects.

Compliance Status

On schedule

RELATED EMP STATUS

<u>EMP (iv)</u>

"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 54,154 trees, 59,572 shrubs on 48 acres, and 12 wetland emergent acres.

- **Johnson Creek:** Planted 20,652 trees, 23,718 shrubs on 22 acres, and 3 emergent wetland acres.

- **Tryon Creek:** Planted 240 trees and 310 shrubs on 0.8 acres.

- **Fanno Creek:** Planted 370 trees and 412 shrubs on 1.2 acres.

- **Balch Creek:** Planted 300 trees and 1,385 shrubs on 0.5 acres. Restored 400 linear feet of stream, in accordance with the Forest Park Natural Resource Management Plan. Conducted activities to remove invasive English ivy.

- **Willamette River:** Planted 8,313 trees and 3,332 shrubs on 13.4 acres.

- **Columbia River:** No known plantings.

- **Downspout Disconnect Area:** The CSO downspout disconnection program provides some plant material to homes that disconnect. During permit year 4, 3,509 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, but potential agency partners are being sought.

POTENTIAL MODIFICATIONS TO THE NPDES PERMIT

None

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

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

- 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.

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

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

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

- Implement the new tree protection and replacement regulations.

- Continue and expand the Revegetation Program.

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

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 4 (FY 98-99)

Accomplishments

- Began testing the swales at the Water Quality Laboratory. (See Monitoring Section.)

- Continued testing the Parkrose School swale. (See Monitoring Section and Early Action Projects.)

- Worked with more than 10 developers to construct water quality landscape planters and other innovative landscape techniques. BES will determine monitoring priorities in year 5.

- 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.

- Continued to investigate other stormwater research in the Northwest.

- 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 will be available in year 5.

- 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.

- BES is developing an eco-roof program and is working in partnership with PDC and others on two multi-family housing projects that will have eco-roofs constructed in fall 1999.

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

Significant Changes/Improvements from Year 3

None

Comparison with Projected Accomplishments

- The Sewer Design Manual was reviewed. Final revisions will be coordinated with the Office of Planning and Development Review's (ODPR) new Development Review Manual (part of the City's Blueprint 2000 process).

- Tests on the Water Quality Laboratory swales and other projects are discussed under other BMPs and in the monitoring section. (See BMP STR3, BMP ND5, and the Stormwater Monitoring Compliance Report.)

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

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

None

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Complete update of the Sewer Design Manual.
- Complete the citywide Development Review Manual.

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 4 (FY 98-99)

Accomplishments

- Modifications to Title 33 parking and landscaping requirements are being prepared to support integration of stormwater management into parking area design and help reduce impervious surfaces in parking lots. The technical approach being considered will allow more shading of the allowed impervious surfaces and more flow of stormwater, especially small storms, into vegetated areas.

- Completed parking lot landscape and layout standards for the airport plan district. These standards provide stormwater management as a component of the required landscape. (See BMP ND5.)

- Prepared new landscape and O&M requirements for new development under BMP ND5. Under these requirements, projects must be designed to reduce the need for pesticides, herbicides, fertilizers and irrigation.

- 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.)

- Developed 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 3

None

Comparison with Projected Accomplishments

The technical review tasks were not completed. Submittal to the public, Planning Commission, and City Council will occur in late 1999.

Compliance Status

Tasks will be completed by June 30, 2000.

RELATED EMP STATUS

EMP (A)(1)

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

See 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)

See BMP ND5

City Code Chapter 33.430, Environmental Zones (Zoning Code)

The Planning Bureau has developed an 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 have been developed for 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

EMP (A)(6)

"*....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 stream 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.)

Private Groups

Two BES staff members participated on a non-profit organization's "Pesticide Reduction on Portland Public Schools Task Force" funded by EPA. The work

has been completed, and recommendations are going to the school board. Information learned will be applied to BES and potentially to other City activities.

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

None anticipated

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Complete the technical work regarding landscape and parking lot requirements. Provide recommendations in a draft report for review, revision, and eventual adoption.

- Initiate technical review of other code requirements to identify water quality impacts. Provide recommendations in a draft report for review, revision, and adoption.

- 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 98-99)

Accomplishments

- Developed the stormwater management mitigation credit system under BMP ND5.

- Continued work on the stormwater fee structure for stormwater discounts. (See BMP ND5.)

- Agreements are being made 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.

- Took the following actions under watershed programs:

  Columbia Slough: Purchased 11 acres.

  Johnson Creek: Purchased approximately 13 acres of floodplain.

  Tryon Creek: Purchased 17 acres along the creek.

  Fanno Creek: Purchased 6.5 acres.

Metro Open Spaces and the City purchased a total of 362 acres during this fiscal year. Since the beginning of the permit, a total of 2,064 acres have been purchased

- City Council approved revised stormwater monthly fees and stormwater system development charges (SDC) at the start of permit year 4.
- Enacted a tree protection and planting ordinance as of July 1, 1999.
- Developed a site stormwater design credit system to protect existing trees when properties are redeveloped or newly developed.

Significant Changes/Improvements from Year 3

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)

City Council adopted more stringent outfall regulations developed by the Bureau of Planning.

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

None

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Coordinate with Metro and other City Bureaus to address conflicting land use goals.
- Continue to purchase land for stormwater management purposes and work with property owners to protect existing natural areas.
- Implement tree protection ordinance and stormwater design credits.

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)

DESIRED OUTCOME(S)

To identify, through testing and evaluation, cost-effective and sustainable methods for citywide implementation of the stormwater management program.

The pilot project is designed to test BMPs and EMPs in a well-defined study area located in NE Portland. Results of activities in the study area will be used to recommend when, where, if, and at what level those activities should be conducted elsewhere in the City. The study area includes a hydrologic catchment area draining to the M-1 stormwater monitoring station, where the City has collected 7 years of baseline data.

KEY ACCOMPLISHMENTS, PERMIT YEAR 4 (FY 98-99)

Accomplishments

Work during permit year 4 included project closeout and facilities design, maintenance, and evaluation activities. Most of the activities from permit year 4 are in the Public Involvement and Structural Control portions of the project. The accomplishments are as follows:

General

- Published the Parkrose Project Effectiveness paper in the AWRA Journal on Human Dimensions of Watershed Management.

Public Education/Involvement

- Distributed 600 copies each of two Stormwater Program postcard tips with "recipes" for clean rivers.

- Continued to work with ODOT to find a community group to adopt the Parkrose Community Traffic Circle planting site. Two groups have dropped out to date. The site is reverting to ODOT administration at the beginning of permit year 5.

- Conducted final project resident survey on public attitudes.

Structural BMPs

- Made progress on the designs for the right-of-way swale and sand filter facilities on NE 121st and Sandy.

- Monitored an additional three storms at the Parkrose Middle School bioswale. Continuing plant replacement and maintenance activities.

- Completed final replacement plantings and second drywater installation (summer 1998) at the Community Traffic Circle Project. Project to revert to ODOT management in permit year 5.

Comparison with Projected Accomplishments

- Design work for the right-of-way projects is moving forward, but has yet to be completed. Design completion is anticipated before the end of the 1999 calendar year, with construction scheduled for spring 2000.

- The closeout newsletter has not been completed yet, but is scheduled for late summer 1999.

- The Community Traffic Circle Project has no community adoption groups to date.

CHALLENGES AND SOLUTIONS

It is still a challenge to complete the last facility design projects. The City has moved away from such an intensive regional pilot approach, and is now operating on a more opportunity-based pilot testing process.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Send out a closure newsletter that announces final information on Pilot Project activities.
- Compile the final survey results.
- Compile a final project report.
- Construct the A&B right-of-way projects (water quality retrofit including a swale and sand filter).

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 4 (FY 98-99)

Accomplishments

- Completed 60 percent design and began discussions about construction methodology. Slated for retrofit in August 1999.
- Conducted a survey of nearby residents to ask neighbors about their desired level of access into the existing fenced site. Their response was, in general, to keep the fence.
- Began development of a revised vegetation plan, given the "no access" outcome of the neighbors' survey.

Comparison with Projected Accomplishments

- Selected a final design alternative: daylighting the major pipe into swales.
- Delayed virtually all operations and maintenance (outside of wildflower applications) until new vegetation scheme is installed. Vegetation

management functions will shift from the Bureau of Maintenance to the BES reforestation group.

CHALLENGES AND SOLUTIONS

Delays with City staffing to support the design effort have been the biggest challenge. Internal construction and design staff resources will be used to construct the site to meet the August 1999 installation timeframe.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Implement the preferred design alternative.

- Determine the feasibility of installing a bird-watching observation deck or mound to add a community amenity. Look into a possible partnership with the Audubon Society and the local neighborhood association (Madison South).

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 4 (FY 98-99)

- Visually inspected the site after Water Avenue project and redevelopment were completed. Because monitoring resources have been shifted to other BMPs (per the revised Monitoring Plan), this site was not monitored during year 4.

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, the new portion of the OMSI parking lot was not designed with the stormwater integration of the earlier development.

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

- Evaluate usefulness of monitoring data from this site to determine whether or not to initiate swale monitoring.

Water Quality Laboratory

DESIRED OUTCOME(S)

Participate in the design of the new City Water Quality Laboratory to ensure that water quality approaches are integrated into the project design.

KEY ACCOMPLISHMENTS, PERMIT YEAR 4 (FY 98-99)

This project was completed in year 3. BMP monitoring of the swales and pond is ongoing under the Stormwater Monitoring Plan. See Section VII: Portland NPDES Fourth Annual Stormwater Monitoring Compliance Report, for ongoing monitoring activities related to this early action project.

CHALLENGES AND SOLUTIONS

None

PROJECTED MAJOR ACCOMPLISHMENTS FOR FY 99-00

Not applicable; project is completed.

GOBI Park Projects

DESIRED OUTCOME(S)

Work with the Parks Bureau to address stormwater quality issues related to GOBI Park improvement projects.

PROJECT STATUS

The November 1998 ballot measure funding additional GOBI projects did not pass. As a result, there is no future project funding.

Section III

MULTNOMAH COUNTY

Multnomah County
Municipal NPDES Annual Report for Permit Year 4
City of Portland and Co-Permittees
Permit #101314
September 1, 1999

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 Four (PY4) (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 fourth permit year covers SWMP activities from July 1, 1998 through June 30, 1999.

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 PY4 Annual Report documents, in summary form, the high level of effort in meeting the Program requirements.

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 Four (PY4), the County actively participated in the "Regional Coalition for Clean Rivers and Streams". For the most part, the residents in these areas will be 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 will review the City of Portland's report regarding 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 the 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 PY4 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 4 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 PY4 compliance accomplishments for each group.

Functional Group Accomplishments: Permit Year 4

Compliance

General NPDES Roles and Responsibilities for Permit Year 4:	*Key Accomplishments for Permit Year 4*
The Consultant/ Compliance Group is responsible for overall Program Development and Management, Program Assessment and Evaluation, and Program Compliance Reporting.	• Completed intergovernmental agreement with City of Portland for County support and definition of MS4 NPDES permit roles and responsibilities. • Conducted Stormwater Program management, including program implementation coordination with County staff. • 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. • Updated and revised the Five-Year Implementation Plan for the Multnomah County NPDES Stormwater Permit Program (pub. September 1995). • 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.

- 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

- Informed Stormwater Implementation Team of Endangered Species Act requirements and relation to NPDES.

Construction

General NPDES Roles and Responsibilities for Permit Year 4:

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 4

- Stabilized eroding roadside areas through use of seeding, blanket mats, and other methods.

- Implemented on-site requirements to include more extensive erosion control measures and continuous on-site monitoring.

- Reviewed draft revisions to 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.

- Construction contract managers began process

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

to customize 00280 erosion control requirements for each contract to better control prevention of erosion.

- Monitored road-building projects (which include stormwater facilities) for 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.

- Attended quarterly Johnson Creek Watershed Council and Inter-Agency Technical Standards Committee meetings (learned/ compared what other agencies are doing for construction BMPs).

Design

General NPDES Roles and Responsibilities for Permit Year 4:

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

Key Accomplishments for Permit Year 4

- Required revegetation and stabilization of cut and fill disturbed areas.

- Drafted new Drainage section for Multnomah County Code, Street Standards for new development. Includes subsections regarding hydrology, hydraulics, water quality, fish passage design, and pollution control designs.

- Inventoried and updated MS4 map.

and properly designed for Capital Improvement Program. They will promote a balance of stormwater quality and quantity (flood control) to the Maximum Extent Practicable in considering stormwater facility design.

Implemented field verification program for PY4.

- 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.
- 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.
- Attended 'Standards' subcommittee meetings to compare/discuss stormwater design standards with other jurisdictions in Johnson Creek Watershed.

Education

General NPDES Roles and Responsibilities for Permit Year 4:

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.

Key Accomplishments for Permit Year 4

- 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.
- 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

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.

Newsletter, a quarterly publication sent to 45,000 residents of the eastern portion of Multnomah County.

- Continued training workshops for County personnel and Transportation Division District Supervisors regarding latest water quality requirements and structural controls.
- 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.
- Held special "Erosion and Sediment Control" Workshop as guidance for County staff in Best Management Practices for source control. Attended by 23 County personnel.
- 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 4:

County Emergency response personnel will ensure water quality concerns are addressed

Key Accomplishments for Permit Year 4

- County staff attended product demonstration of spill adsorption product for hydro-carbon based spills to reduce need for sand or kitty litter.
- County Emergency manager continued close

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 addressing these concerns to assure necessary coordination between agencies.

working relationship with key agency people, including DEQ spill response manager.

- Prohibited use of salt as de-icing material on roadway.
- 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.
- Emergency management teams and contractors responded with appropriate equipment (containment booms and absorbent materials) involving minor spills, prevented oil from reaching MS4.
- County road maintenance role and procedures 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 4:

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

Key Accomplishments for Permit Year 4

- Implemented procedures for design standards review of drainage facilities to coordinate permit review between Planning and the Design Section of the Transportation Division.
- 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

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.).

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 4:

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

Key Accomplishments for Permit Year 4

- Inspected HDP (Hillside Development) and GEC (Grading and Erosion Control) permit holders for compliance with permit conditions involving erosion control.
- 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

erosion control requirements through contractor bonding for public right-of-way projects. Ensure maintenance will be conducted for life of project and immediate future.

such as silt socks, bio-bag filters and immediate pavement restoration.

- 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 4:

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 4

- Utilized new chemical application truck which minimizes dispersal of herbicides, minimizes amounts used, and automatically calculates rates of application.

- 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 adjusted 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.

- 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, etc. and recorded information in computer database.

- Implemented a system for tracking and correcting water quality problems observed during routine maintenance operations.

- Road Maintenance staff attended internal training workshops (2 during PY4) to demonstrate use and follow-up of monitoring maintenance procedures and to discuss what improvements can be made to reduce pollutants to the MS4.

- 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 4.
- √ 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 4 - July 1, 1998 through June 30, 1999

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	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	• 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. • Prepared articles for M.C.TRANS Newsletter (distributed to employees and the public) to promote greater public involvement in various stormwater pollution prevention efforts. • Published "Water Quality: Our Shared Responsibility" article in M.C.TRANS Newsletter including ways the public daily activities can help protect water quality through source control (Summer 1998). • 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. • Attended public Fairview Creek Committee meetings. • Contributed $2,000 to Regional Coalition for Clean Rivers and Streams for PY4. • 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.***

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Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 4 - July 1, 1998 through June 30, 1999

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	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	• Special training for Erosion and Sediment Control held as guidance for County construction inspectors and project managers in Best Management Practices for proper Erosion and Sediment Control methods, especially for road construction. Session attended by 23 County personnel from Department of Environmental Services (October 1998). • 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. • Training sessions with County Road Maintenance group included review of Stormwater Maintenance Manual, videos re: WQ impacts of road-building activity, meetings re: erosion control practices. • 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 PY4 Stormwater Program attended by Road Maintenance Managers & Supervisors, Transportation Division personnel. • Held Endangered Species Act workshop for key County personnel (staff, managers, and commissioners) to introduce key concepts to Stormwater Implementation Team. Included relationship to Clean Water Act, NPDES, and outlined initial response to National Marine Fisheries Service. • Presented Multnomah County NPDES work logs for Stormwater Toolbox to ACWA Municipal Stormwater group at NW regional meeting (about 50 attendees) (October 1998).	• Kept notes of Erosion Control workshop attended. • 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.

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Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	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	• Participated in ODOT Technical Advisory Committee to review and improve road waste management. • Revised Maintenance Manual, reviewed by District supervisors to incorporate specific NPDES considerations and requirements. • Removed collected catchbasin materials (53.44 tons) to proper disposal site for incineration. • Participated in and received information on new Inverness Stormwater Sediment Dewatering facility opening. • 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 pollutants to the stormwater system.	Determine if current maintenance practices for roads/ditches are effective at reducing stormwater pollution; if not, make the necessary improvements.	Road Maintenance Compliance Permits	• Evaluated use of more 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 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	• Compiled records and calculated total amount of debris collected, problems addressed, miles swept, etc. • Reviewed summary reports	On schedule. No modifications. Westside Maintenance Agreement with City of Portland (PDOT) and Multnomah County (DES) provides for road

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Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
	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.		sumps with the goal of protecting water quality. • Reviewed NPDES manual for updates and possible changes due to ESA listings. • Updated implementation plans for PY4 activity. • Evaluated use of sand in crack-sealing operations and 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). • Evaluated and suggested improved methods to reduce TSS and reduce discharge of pollutants especially to groundwater. • Required approach roads to be rocked and paved to reduce tracking of soils onto roadway during road construction projects. • 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 use of "silt socks" in inlets/catchbasins to further reduce sediment. • 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.	to determine extent of controls.	maintenance in unincorporated areas (primarily "Dunthorpe") to be conducted by PDOT at the same level of service as PDOT provides to City roadways.

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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 staff attended Governor's OSHA conference regarding pollutant reduction in use of pesticides, groundwater protection. Reviewed procedures and discussed with emergency management and hazardous materials manager. • Full-time staff person addressed herbicide, pesticide application, with water quality impacts in mind. • Continued testing use of plant regulators (i.e., plant hormones) instead of herbicides which could maintain vegetation in roadside ditches. • Used new herbicide spray truck which computerizes 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 98). Included new spray reporting requirements to meet IPM for Salmon recovery program. • 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. • Established informational brochure for landowners managing "no-spray zones." • County staff attended ODOT training on CMA (anti-icing) application to improve practices which may reduce pollutants. • Participated in Herbicide Container Recycling Program, which keeps containers out of landfills. • Updated public education brochure regarding eliminating noxious weeds through competitive plantings (less use of herbicides). Distributed at County DES lobby.	• 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.

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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	• Researched use of several asphalt release products. Compared with other products for cost, availability, and environmental impact. Decided to test use of this environmentally-friendly product. District supervisors attended product demonstration session. • Erosion control inspection requirements included conditions for spillage, haul routes, and mud tracking. • Increased 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. • Constructed sediment collection area to contain silt from truck wash area. Installed, monitored, and maintained straw bales for extra filtering and erosion prevention. • County field inspectors continued to monitor grading permit activities. • Continued to inspect County fleet trucks daily to determine if defects/leaks require repairs. • Continued to respond to 911 referrals and complaints to monitor and clean up spills on County roads. • All field staff of Road Maintenance District #1 (Westside/Skyline) met to review and discuss correct and safe truck hauling practices. Determined changes for improvements including limiting and eliminating leakage. Sampled anti-stick for asphalt dump trucks.	• 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.

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Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 4 - July 1, 1998 through June 30, 1999

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	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	• Reviewed City of Portland Stormwater Manual, Chapter 6: BMPs for Commercial, Industrial, and Multi-Unit Dwellings. • Attended meetings including Columbia Corridor Association reports of Portland's progress in implementing industrial BMPs.	***See City of Portland Annual Report.***	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. 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	• County Emergency Response staff attended meetings with Portland BES and DEQ to discuss spill response program especially relating to prevention of impacts to storm drains. • 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. • Reviewed Road Maintenance role and procedures in the event of a large scale diesel spill.	• 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.

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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	• Developed 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. • 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. • Corrections officer and inmate work crews continued to respond to litter/dumping complaints (funding provided by County). • 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. • Emergency Management team responded quickly to inspector report that three 55-gal. drums of unidentified material were discovered (District 1). Foss Environmental was notified, barrels were removed and tested. No spillage occurred. • Inspectors continued to aggressively monitor development and other roadway activity to correct and ensure erosion control measures were being conducted. • County crews removed illegal dumping material and referred matter to DEQ. • County inventoried all culverts. Cleaned, repaired, replaced as needed and field inspected for illicit connections. • Prioritized by inventory of culvert system in District 1 (Westside Skyline).	• 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.

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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	• 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. • Multnomah County continued negotiations with City of Portland for agreement where Portland would implement 2040 plan in westside urban areas. • 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.

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Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	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	• 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. • County Planning issued citations for grading violations. Each required site inspection, notification, and follow-up resulting in appropriate GEC permit or other action. • 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) • Responded to complaints related to stormwater runoff and associated sediment loads. Required property owner to prevent extraneous runoff from commercial nursery. • Project managers and inspectors attended training session for proper erosion control methods on construction sites. • 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.

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Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	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	• Transportation Division developed action items for focus group work session regarding erosion and sediment control. • Project managers and inspectors attended training sessions for proper erosion control methods[1] on construction sites, and [2]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. • Continued to use and require silt socks to further reduce sediment in runoff. • Hillside Development (HD) or GEC permits are required for grading, clearing, or fill on sites within the permit area. • 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 Department of Environmental Services began coordination process for ensuring transportation projects apply same standards required in GEC permits for private development. Standards are more stringent in Tualatin Basin (slide repair projects on Cornelius Pass Road). Monitored effectiveness of erosion control measures and modified as necessary to reduce discharges. • Tracked new development permits where Multnomah County and City of Portland Building Bureau are involved. • 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.

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Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
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. • 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. • Final inspections were conducted to ensure compliance before release of performance bonds.	• Kept records of erosion control, bonds, and meetings attended. • Contractors were generally in compliance with requirements during PY3.	On schedule. No modifications.
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 (new water quality facilities are recommended as part of the Johnson Creek Resources Management Program).	• Recorded level of effort expended on review of plans, design of water quality facilities, and attendance at committee meetings.	On schedule. No modifications.

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Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	Assessment of Controls	Proposed Modifications to Schedule or Activities/Status of Cooperative Arrangements with Co-Permittees
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. • Conducted wetlands analysis as part of Transportation Capital Improvement Program.	• 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.

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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	• Began coordination 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). • Referred Portland "Watershed Revegetation Program" to County vegetation manager.	• 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.

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Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	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 Multnomah County Code Street Standards, including sections on hydrology, hydraulics, runoff calculations, drainage facility design, fish passage design, and water quality. • County personnel continued to participate in the Johnson Creek Design Standards subcommittee. The committee was charged with recommending standards for water quantity and quality control in the watershed. • Reviewed draft water quality criteria issued by the City of Portland. Criteria have been delayed pending final draft of the new Portland Stormwater Manual. • 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.

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Multnomah County NPDES Annual Report for Portland Permit Area - Permit Year 4 - July 1, 1998 through June 30, 1999

Best Management Practice	Overall Intent, Goals and Objectives	Functional Group(s) Responsible for BMP Implementation[1]	Key Accomplishments for Permit Year 4	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	• Implemented 300 foot setback requirement in West Hills Rural Area Plan. This applies to designated significant streams as part of SEC zoning program. • Specifications for landscape in right-of-way require use of low impact species. • 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 inventory and 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.

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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 workshop 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. • Trained new County staff to manage respective BMPs and activities.	• 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.

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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.

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Section IV

PORT OF PORTLAND

Port of Portland
Municipal Storm Water
Annual Report
Permit # 101314
Submitted August 23, 1999

Introduction

This report is submitted to the Oregon Department of Environmental Quality (DEQ) in compliance with the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Discharge Permit (Municipal Permit) requirements. As a co-permittee, the Port of Portland's (Port's) annual report contains the information required by the Municipal Permit schedule B (6) and (7a.-d.). Please refer to the introductory section and executive summary of the entire co-permittee submission for report format details. All tables and figures referenced throughout this report are compiled in Appendix 1 and Appendix 2, respectively.

Schedule B (7 a.-b.) of the Municipal Permit requires a description of implemented components and changes to the Port's Municipal Storm Water Management Plan (MSWMP). The Port MSWMP, submitted in the Part 2 NPDES Municipal Permit application, was approved by the DEQ. The Port MSWMP describes a series of Best Management Practices (BMPs) to be implemented throughout the 5-year Municipal Permit term. The MSWMP BMPs were selected to satisfy the requirements for municipal compliance promulgated in 40 CFR 122.26(d)(2)(iv). The MSWMP BMPs are reviewed below in the same order as they were listed in the submitted MSWMP. The BMPs were fully described in the Municipal Permit application referenced above. For the purposes of this annual report, only the BMP description, status, implementation activities, and any proposed BMP changes will be discussed.

Schedule B (6) and (7c. - d.) of the Municipal Permit requires permittees to submit a summary of the analytical data collected for municipal monitoring compliance. The analytical data representing the quality of storm water runoff from various land uses within the municipal permit jurisdiction, which includes the Port, are included in the Portland urban area data analysis in the final section of the co-permittee report document.

The Port submitted the completed Port Municipal Storm Water Monitoring Program to DEQ on April 8, 1998. Following submittal, the Port initiated the BMP monitoring portion of the Port Monitoring Program. Data from the 1998/1999 permit year sampling are presented in Tables 1 and 2. In addition, the Port has worked with the City of Portland on agreements to pay the Port's share of costs for municipal NPDES permit monitoring and TMDL monitoring.

The industrial permit compliance monitoring data from samples collected at specific Port industrial outfalls for the 1998/1999 season are included in Tables 3-8. The Port Industrial Storm Water Permit data represents runoff quality from a range of industrial activities occurring on Port property. Samples were collected from the Portland Ship Repair Yard (PSY), Portland International Airport (PDX), and Marine Terminal 6 (T-6). These samples are representative of a variety of activities, including transportation, industrial, and commercial land uses. 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 storm water monitoring requirements. The grab sample analysis from the industrial sampling was used to estimate pollutant loads for each storm sampled and each sampling location.

The Port owns approximately 9,700 acres in 3 operating areas (PSY, PDX, and the marine terminals) and 1 non-operating area (several industrial parks) within the City of Portland Urban Services Boundary. These areas were described in full in the Part 2 NPDES application, therefore, only a brief description is provided below.

Ship Repair Yard

The Portland Ship Repair Yard (PSY) consists of approximately 94 acres located on Swan Island in North Portland. The Ship Repair Yard is leased to, and operated by, Cascade General. Cascade General is responsible for daily environmental compliance. The industrial storm water permit at PSY, 1200-Z, is now in the operator's name, with the subtenants listed as co-permittees to the permit. The list of PSY tenants and co-permittees is included in Table 9.

Airport

Portland International Airport (PDX) is approximately 3,229 acres in size and is located in Northeast Portland. The airport's storm water runoff discharges into the Columbia Slough through a series of 9 outfalls. PDX is currently regulated under the General Industrial Storm Water Permit 1200-T and the new storm water and wash water discharge permit for de-icing and anti-icing materials. A new industrial storm water discharge general permit (1200-COLS) for the Columbia Slough watershed was recently proposed and will replace the 1200-T permit. The 1200-COLS reflects the Total Maximum Daily Load (TMDL) of pollutants that the Slough can assimilate and meet water quality standards. Tenant co-permittees are listed in Table 9 of this report.

Marine Terminals

The marine terminal operating area includes five terminals occupying approximately 1,023 acres. The storm water runoff from the terminal areas enters into the Willamette River, the Columbia River, and the Columbia Slough. Marine tenants with NPDES permits are listed in Table 9. T-6 is the only Port terminal located on the Columbia River. It is operated by the Port and complies with the 1200-Z permit.

Industrial Parks

The industrial parks managed by the Port include Swan Island/Port Center, Rivergate, Mocks Landing, Portland International Center (PIC), Troutdale Industrial Park, and Brookwood Corporate Park. However, Troutdale (75 acres) and Brookwood (22 acres) are outside of the municipal NPDES permit area. The total industrial/commercial park area within the municipal NPDES permit area is approximately 3,838 acres. The Port has sold much of the property in the above mentioned parks, and the remaining property is approximately 80% leased. Figure 1 is a map of Swan Island, Mocks Landing, and the Port Center. Figure 2 is a map of the Rivergate District. The maps show Port owned property, leased property, and sold parcels. The storm water runoff from the industrial park areas discharges to the Willamette River, the Swan Island Channel, and the Columbia Slough. Tenants located in the industrial parks are responsible for obtaining and complying with applicable permits independent of the Port. The industrial park tenants with NPDES permits are listed in Table 9.

Port of Portland Organizational Structure

The Environmental Services Division (ESD) is a corporate branch in the Port's Policy and Planning Department. The ESD is responsible for environmental issues including property transactions, while the operating areas are responsible for day to day compliance. The ESD provides the operating areas with the appropriate environmental language for property transaction documents. If Phase I environmental site assessments or walk-throughs are required, then ESD is responsible for scheduling and completion.

Schedule B (7a. - b.) Requirements

The remainder of this report describes the BMPs in the Port's Municipal Storm Water Management Plan (MSWMP), and briefly summarizes the Port's activities within these BMP categories. Most BMP categories are comprised of several tasks, as described in the MSWMP.

BMP Number:
PP1 - Planning and Policy Development

BMP Description:
Promulgate policy and practices to address storm water pollution issues on all Port lands.

Status

The ESD continues to provide policy and program direction to the Port operating areas. Many Portwide storm water programs have been developed and implemented for the purposes of storm water control and runoff water quality improvement. The ESD's role is to develop the required storm water 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 Illicit Discharge Detection and Removal Program, the Municipal Storm Water Monitoring Program, and the Tenant Program. A Port-wide catchbasin stenciling program, and a catchbasin inspection program at PDX are also being developed.

The Port will comply with the new storm water and wash water discharge permit for de-icing and anti-icing materials, which ensures compliance with the Columbia Slough TMDL waste load allocations for dissolved oxygen. The Aviation Environmental BMP Committee meets monthly to address storm water BMPs, including deicing practices. A new industrial storm water general permit (1200-COLS) for the Columbia Slough watershed was also recently proposed, which reflects the TMDL of pollutants that the Slough can assimilate and still meet water quality standards.

The Port has developed a number of storm water related practices. All new policies, practices, and programs relating to the storm water program will be discussed below in the appropriate BMP sections.

Operating area site specific practices are being improved and developed as operating area storm water awareness increases. The Port is dedicated to continued storm water education efforts. The site specific pollution control practices developed are documented in the operating area Storm Water Pollution Control Plans (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
Development of pollution control practices is typically concurrent with the implementation of the various storm water-related programs. As guidelines are developed they are documented as part of the implementation process. In some cases, documentation may include correspondence to a Port tenant and incorporation of a practice in Portwide environmental procedures for storm water. In all cases, the documentation of the developed practice will be maintained in the Port MSWMP, the operating area SWPCP, or other appropriate storm water documents.

The ESD has made progress in developing practices concerning property inspection walk through documentation, environmental lease language and use agreement updates, and the development of a Portwide Environmental Management System (EMS) and Environmental Management Information System (EMIS).

Task 2
Assessment of the water quality monitoring data for Municipal Permit compliance consists of a review of the industrial storm water data and the data obtained from the City's monitoring program. The monitoring data collected for purposes of the Port's industrial storm water compliance are included in Tables 3-8 of this report. The samples collected represent a cross section of the industrial activities occurring on the Port's property. In summary, review and analysis of the data shows that 100 percent of the PDX sample results were within the benchmarks of the 1200-T permit. Approximately 86 percent of the T-6 data results and 72 percent of the PSY data results were below 1200-Z benchmarks. Review of the permit jurisdiction data is included in the last section of the overall co-permittee report.

The assessment of the BMP effectiveness monitoring data does not directly provide information on the quality of storm water leaving Port property. The data was intended to provide information on the effectiveness of structural BMPs. The Port's municipal storm water monitoring program includes the monitoring of three structural BMPs. The Port did not conduct an analysis of one of the structural BMPs, the Stormceptor unit. 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 1 and 2. Information this year confirms that the current BMP effectiveness monitoring program needs revision.

Task 3
The operating areas have the lead role in the continued development of the on site specific practices to ensure compliance with storm water regulations and progress with storm water pollution prevention goals. The ESD provides guidance and motivation to continue storm water practice development and implementation. New practices are to be documented and maintained in the operating area SWPCPs or other appropriate storm water documents. If a new practice or BMP is implemented on Port property that is not covered by a site specific SWPCP, then the practice is documented in the MSWMP and maintained by ESD at the corporate office. Figure 3 is the *Best Management Practice Summary Form* that has been developed and distributed to appropriate personnel to instigate documentation of new BMPs or practices in the operating areas. New operating area practices are described below in the appropriate BMP Section.

ED1 - Employee Education

BMP Description:
Inform employees of new storm water pollution control efforts and activities in each Port operating area. Provide guidance for implementing 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. Table 10 lists the storm water oriented training accomplished and attended this compliance year. Educational meetings, information exchanges, and presentations have covered a variety of BMP topics ranging from de-watering practices to the BMP monitoring program. The agendas, list of attendees, and summary of information presented are maintained in either the operating area or ESD files, or the Port MSWMP.

Implemented Activities

Task 1
The Port attends Association of Clean Water Agencies (ACWA), co-permittee, and other agency meetings focusing on storm water education issues. For example, the regional spill meetings will be attended by Port staff or a Port staff representative.

Task 2
Operating areas continue to develop and improve employee storm water awareness training. Regular meetings contain environmental subjects, including spill response procedures and hazardous waste management.

Marine, PDX, and PSY have storm water inlet stenciling programs that are in place or being developed. Stenciling drains is an effective educational tool that warns people against discharging non-storm water discharges into the system.

PDX conducted training courses on construction dewatering and erosion control in November 1998 for construction personnel. PDX has also developed an airport specific environmental training video, which is periodically shown to Port and tenant employees. Aviation currently conducts spill response training, and will begin training for procedures on specific waste and materials handling this November.

The Marine Tenant Program incorporates training sessions with tenant employees and the Properties Maintenance crew regarding BMP development and implementation. These meetings include discussion of applicable regulations, review of current practices, and an information sharing session. Training courses conducted this year are listed in Table 10. All other documentation of operating area training is maintained in the operating area environmental files.

Training materials were developed by ESD and include slides and overheads. These materials have been developed and are maintained to be used for continued training and awareness meetings throughout the Port. These materials are part of the training program that will be continued as part of municipal storm water compliance.

Task 3
The Port continues to participate with the City and other co-permittees in storm water meetings. ESD staff, for example, attended the City of Portland's Storm Water Manual Training this year as well as the Pacific Northwest Storm Water '99 annual meeting. Information from these types of meetings is distributed to the Port operating areas when applicable.

Task 4
The Port Tenant Program continues to be developed. The initial training and awareness portions were conducted in 1996 and 1997. The operating areas continue to hold tenant meetings where storm water issues are discussed. PDX has developed a BMP Committee program, which includes regular meetings that facilitate BMP training communications with PDX tenants. Substantial progress has also been made this permit year in the development of the Marine Tenant Program. Two BMPs have been developed under this program, and two others are currently in draft stage. One of the BMPs currently in place addresses storm water discharge, while the other relates to spill prevention and response. Several more BMPs are scheduled to be in place within the year, including one that addresses waste management and another pertaining to hazardous waste/hazardous materials management. The Marine BMP development schedule is shown in Figure 4. Marine has also started a tenant newsletter, which keeps tenants informed on current environmental issues at the Port. The newsletter includes listings of events and websites intended to provide additional information to tenants.

PI1 - Public Programs

BMP Description:
Support public programs which increase public awareness of the importance of water quality protection.

Status

The ESD will continue to relay any relevant public information and materials related to stormwater to Port operating areas and tenants.

Implemented Activities

Task 1
City brochures, documents, and pamphlets related to storm water will continue to be reviewed and distributed. Metro Haz-Waste information, spill procedures, and brochures developed by BES have been distributed to the operating areas.

Task 2
The Port will continue to participate in projects connected with water quality protection and enhancement.

Task 3
The operating areas made contributions to public water quality awareness activities throughout the 1998/1999 permit year. The Port participated in SOLV. PDX environmental staff gave a storm water BMP presentation for the Water Environment School at Clackamas Community College, and participated in a career talk related to storm water BMPs for apprentices in a Science and Engineering Saturday Academy. PDX was also a co-sponsor with the City for the Slough Regatta event. The T-6 environmental staff gave a presentation about marine spill

procedures at the Portland regional spill committee meeting. This meeting was attended by representatives of several agencies from the region. Cascade General has implemented a public review plan in regards to a project that involves the dismantling of decommissioned naval ships. The plan is aimed at educating and involving the public on issues associated with the project, including hazardous materials abatement and management. Features of the public review plan include: the distribution of informational materials to stakeholders through mailing lists; guided tours of the Portland Ship Repair Yard; and open houses designed to disseminate project information to affected parties, and provide the opportunity for feedback.

OM1 - Operations and Maintenance Storm Water Quality Facilities

BMP Description:
Evaluate existing storm water maintenance practices that affect water quality at existing storm water quality facilities.

Status

The Port currently complies with 3 industrial storm water permits for properties within the Portland Urban Services Boundary. These permits include two 1200-Z permits issued for T-6 and PSY, and one 1200-T permit for PDX. The Port will comply with the new 1200-COLS permit, which will replace the 1200-T permit for PDX. Cascade General is the operator for PSY, and the 1200-Z permit is in Cascade General's name. The operating areas have updated or are in the process of updating the site specific Storm Water Pollution Control Plans (SWPCPs). The updates include the new 1200-Z requirements and any changes in storm water practices and policies implemented at the facility.

Implemented Activities

Each operating area has developed and implemented specific storm water 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
PDX maintenance and the PDX environmental staff continue to complete storm water BMP maintenance activities according to the SWPCP schedules. Routine BMP maintenance completed includes: boom deployment, maintenance, and replacement; straw bale inlet protection and replacement; inlet filter installation maintenance and replacement; detention/quiescent pond cleaning; vegetative swale maintenance; maintenance of oil water separators; maintenance of outfall access; and catch basin inspection and cleaning.

PDX has developed a number of BMP maintenance tools including documented schedules for BMP maintenance, as well as methods for recording BMP management activities conducted. Tables 11 and 12 are examples of the Storm Water BMP Maintenance Schedule and the PDX Oil-Water Separator Cleaning Program Schedule, respectively, that have been developed and implemented. Figure 5 is an example of one of the many inspection forms that PDX will be using to inspect and record BMP maintenance activities. PDX has developed inspection forms for documenting the condition of Port areas and the efficacy of Port practices, including: Outdoor Material Storage Areas, Oil-Water Separators, Catch Basin Filters, Catch Basins,

Above Ground Storage Tanks, Fuel Islands, Mobile Fueling, Wash Areas, and Storm Water Control Cleaning and Repair Logs. Examples of these forms can be found in both the PDX SWPCP and the Port MSWMP.

PDX continues to implement a computerized system that logs the Global Positioning System (GPS) location, inspection, cleaning, structural condition, and filter condition information for each of the 2,648 catch basins, inlets, and manholes at PDX. The PDX Master Drainage Plan is shown in Figure 6. The system documentation records will be maintained in the PDX maintenance files. When a catch basin, inlet, or manhole is inspected a record of the observation is completed, and the information is transferred to the computerized management system.

PSY

Cascade General retains many of the routine maintenance tasks on a computerized system. Storm water maintenance activities conducted at PSY include: boom deployment, maintenance, and replacement; maintenance of the ballast water and dry-dock water treatment plants; and catch basin cleaning, maintenance, and inspection. Maintenance records are maintained in their maintenance office. An estimated 100 catch basins per quarter were cleaned and inspected during the 1998/1999 permit year.

Terminal 6 (T-6)

The marine terminal maintenance computer system has been upgraded, and is now in operation. Maintenance and environmental inspection information is tracked on this system, which includes work orders to cover any maintenance work conducted.

Storm water maintenance activities completed at T-6 throughout the last permit year include: catch basin inspection and cleaning; oil/water separator maintenance; and inlet filter maintenance and replacement. Additional catch basins were installed this permit compliance year, bringing the total number to 170. All catch basins are inspected monthly, and cleaned as needed by the T-6 maintenance crew. Filters are checked during these inspections, and replaced if necessary. An estimated 20 filters were replaced throughout the 1998/1999 compliance year. Approximately 3 to 4 cubic yards of materials were recovered from the clean out process. The oil/water separators are inspected monthly, and are generally cleaned annually. A BMP field form is completed for all inspections. The cleaning and waste disposal records are maintained in the Waste Stream Management Book in the T-6 Environmental Office.

Industrial Parks Maintenance

Properties Maintenance staff are responsible for maintaining all Port landscaping for the industrial parks and the majority of the marine terminals. The catch basins located on Swan Island that are on Port property are now cleaned once a year by an outside professional contractor. The contractor is responsible for proper waste disposal. The clean out records are maintained in the Properties Maintenance Office files.

Operation and maintenance specifics for each operating area are documented in a number of places: the SWPCP; the maintenance computers (PDX, PSY, and Marine); the environmental files; and written Standard Operating Procedures. Records and documentation of the maintenance activities and inspections continue to improve.

Waste collected from operation and maintenance activities is disposed of as follows. Storm drain inlet sediment and street sweeping debris are disposed of at the hazardous waste landfill

in Hillsboro (USA Waste Services). The material from the oil-water separator at T-6 is removed and disposed of by Spencer Environmental with their sump cleaning trucks.

Figures 7 and 8 are copies of the BMP Inspection and Maintenance Form and the BMP Maintenance Schedule Form, respectively. This form was distributed to the appropriate Port personnel.

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 storm water system.

Status

Maintenance of road and vehicle maneuvering areas is conducted by the Port operating areas. Marine maintenance, PDX maintenance, Cascade General, and the Industrial Parks Properties Maintenance crew are responsible for maintaining the surfaces in their respective areas. The maintenance plans and SWPCPs for the operating areas address many of the operating and maintenance issues for roads and surfaces.

Currently the most intensive effort concerning road and surface maintenance is sweeping. The operating areas conduct sweeping regularly. PDX, for example, conducts sweeping of the airfield on a daily basis. At the Industrial Parks the sweeping is conducted by outside contractors. Records of sweeping are maintained at PSY, PDX, and T-6 in the maintenance files. Swept material is stockpiled in a manner that prevents impact to storm water runoff. The material is tested for hazardous waste content and appropriately disposed at Metro or Sanifill. The sampling and disposal tracking records are also maintained in the operating area maintenance files. In some cases, the information is also maintained by the operating area environmental staff as part of waste stream management.

Implemented Activities

The Port conducts limited deicing on streets and roads (exclusive of PDX). At PDX a new "No Urea Policy" for pavement deicing has been formally adopted. The policy was initiated by a letter sent to all PDX tenants prohibiting the use of urea for surfaces deicing

PDX Deicing
A new Deicing and Anti-Icing Runoff Control Program was instituted in the 1997-98 deicing season. The program is a combination of strategies to control, collect, and dispose of deicing and anti-icing materials. The runoff controls are being implemented in phases, outlined in the new storm water and wash water discharge permit for de-icing and anti-icing materials. Compliance for the Deicing permit is required and will follow the schedule set forth in the TMDL for the Columbia Slough. This TMDL requires discharges to the Slough to be in compliance with the numeric waste load allocations by the winter of 2003/2004.

The schedule for implementation of the fully integrated anti-icing and deicing control system will follow the Option 2 schedule in the new storm water and wash water discharge permit for de-icing and anti-icing materials. Meanwhile, PDX deicing issues continue to be addressed by Port

environmental staff, a consultant team, the PDX co-permittees, DEQ, BES, and other regional committees. The deicing chemicals used at PDX are FAA approved. The pavement deicing chemicals used are sodium formate, potassium acetate, and magnesium chloride. A switch from potassium acetate to potassium formate is planned for the 1999-2000 winter season.

The results from the 1998-1999 deicing projects were compiled and submitted to DEQ in the Annual Deicing and Anti-icing Management Report. The *PDX 1998/1999 Deicing/Anti-icing Management Reports* are available for review from the Port or Elliot Zais of DEQ.

The deicing studies slated for the 1999-2000 season are being developed by the Port deicing team and the Port's consultant. The 1999-2000 PDX deicing program will be documented in the Annual Runoff Control Plan due to DEQ on October 1, 1999. Many projects initiated last winter will be continued, including trench drain operation at concourses C-D and glycol collection, and deployment of two Glycol Recovery Vehicles (GRV). Other deicing management efforts include forced air deicing for aircrafts using a two step chemical application process for pavement deicers, adjusting aircraft deicing material mix ratios based on ambient temperatures (to be done by airlines), and researching new deicing technologies.

Records of the deicing studies and projects are being maintained by PDX maintenance and Port environmental staff. Due to the extent of the projects, the amount of data, and the extensive coordination efforts, the PDX deicing information is maintained independently of the PDX SWPCP and storm water files.

PDX Surface Repairs

Roadway, surface repairs, and painting are conducted by PDX maintenance staff. PDX procedures for handling waste products and cleaning equipment continue to improve through careful storage, application, and disposal. New features of the PDX maintenance facility are being constructed to eliminate exposure of storm water and storm water runoff to potential contaminants. The construction project will be completed in the Fall of 1999 and includes extending the indoor equipment storage areas, building an equipment wash bay, building an unloading bay for sweeper and catch basin clean out debris, and installation of a toluene recovery system. Improved protocols and waste disposal procedures are documented in the PDX SWPCP.

Property Maintenance

Property Maintenance has recently developed a Storm Water Discharge BMP for several activities related to streets and vehicle maneuvering areas. For example, this BMP requires the cleanup of granular material, sand, and dirt from roadways, and prohibits vehicle washing, chemical mixing, and fueling operations in paved areas.

OM3 - Truck Hauling Practices

BMP Description:
Inform tenants and Port employees of City truck hauling practices.

Status

The Port operating area SWPCPs and maintenance standard operating procedures address vehicle operation and maintenance. The Port maintains a minimal fleet and transports small enough quantities of significant materials that the truck hauling practices do not apply.

Implemented Activities

Task 1
The Port continues to maintain sound vehicle operation and maintenance practices. Vehicle maintenance performed by Port staff is conducted indoors. Scheduled maintenance is performed on Port vehicles in order to avoid off site breakdowns that could cause leaks and exposure of significant materials to storm water runoff.

Properties maintenance trucks have been installed with metal trays to avoid any leaking of spilled materials during the transport of fertilizers and herbicides. Other landscaping materials are transported on Port property by trained professional landscape contractors hired by the Port.

Task 2
The Port will continue to distribute appropriate informational material (concerning trucking practices) made available by the City and others to relevant Port operating areas.

IND1 - Industrial Control

BMP Description:
Develop a program to control the discharge of pollutants in the storm water 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 storm water permits since they were issued by DEQ. Table 9 lists the Port tenants that have their own NPDES permits, and those that are complying with the storm water industrial regulations as co-permittees to the operating area permit. All tenants with ground leases, hangers, etc. are required to enter into stormwater use agreements. A sample stormwater use agreement is attached as Figure 9.

Storm water controls and BMPs have been implemented at the Port operating areas in accordance with their SWPCP schedules, requirements of the municipal storm water program, and ESD or consultant recommendations. The following BMPs have been planned and/or implemented throughout the past permit year:

PDX

- New toluene recovery system to be installed for Fall 1999
- New wash bay construction for maintenance equipment and vehicles to be completed in Fall 1999
- Storm inlets continue to be stenciled
- 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
- Erosion control training meetings conducted each Fall
- Tenant BMP committee formed and meetings conducted regularly
- Maintenance staff storm water training sessions conducted each Fall
- Airside operations training sessions conducted each Fall
- Port fire department training sessions conducted each Fall
- Dry season inspections conducted
- "No Urea Policy" established, implemented, and enforced
- "No Wash Policy" established, implemented, and enforced
- New sweeper and catch basin waste containment system to be constructed for Fall 1999
- BMP maintenance schedule developed and documented
- Storm water training video developed and shown at tenant and PDX staff training
- Tenants installed wash pads for containment and disposal of vehicle and equipment washing

Industrial Parks

- Cooperated in the revegetation of large areas along the Columbia Slough

PSY

- Added new BMP for ship to shore transfer, consolidation, and management of hazardous materials

Marine Terminals

- Current equipment wash area at T-6 to be downsized and diverted to the sanitary sewer system in Fall 1999
- Stenciled T-6 inlets along dock
- Installed spill procedure labels into T-6 large equipment
- Constructed a hazardous cargo storage area at T-6 for all containers with hazardous chemicals. Drainage can be shut off with nearby sluice control valves to prevent hazardous materials from entering the Columbia River in the event of a spill or leak
- Conducted dry season inspections at all terminals
- Conducted BMP monitoring
- Developed catch basin inspection policy – expanding the number of catch basins inspected
- Reduced mowing and chemical applications by planting native species in landscaped area
- Developed new BMP inspection schedule and form

Tenant Properties

The Port Tenant Program will address storm water BMP implementation with all Port tenants that have the potential to impact Port storm water quality. The tenant survey and tenant meetings have been accomplished and are the first steps in the Program. One goal of the Tenant Program is to develop and implement management practices that will help reduce the amount of pollutants entering the storm water runoff from existing and developing Port tenant

properties. PDX conducted a tenant BMP meeting in Spring 1999. PDX also formed a BMP Committee that focuses on deicing and storm water BMPs for PDX and PDX tenants. Inspection walk-throughs are performed as part of property transactions.

Under the aviation tenant program, tenants are required to sign Storm Water Use Agreements (Figure 9) to comply with the Port's storm water permit and pollution control plan. Tenants are also required to sign Construction Dewatering Agreements for construction projects that require dewatering, and Storage Tank Use Agreements for operation of above ground, underground, or mobile storage tanks. During lease negotiations, property inspection walk throughs are conducted and storm water permits and BMPs are discussed.

The Marine Tenant Program was started this permit year. The Tenant Advisory Group formed a list of 13 BMPs to be completed by the year 2000. Two of the BMPs, storm water management/water quality and spill response, were completed this permit year. A newsletter is regularly distributed to tenants to inform them of environmental issues, including storm water. Environmental Enhancement Awards are awarded to tenants who make improvements in their storm water practices.

Implemented Activities

Task 1
SARA Title III Section 313 facilities were identified through the Portwide tenant survey distribution and information compilation. The tenant survey was the first phase in the Storm Water Tenant Program. The survey information continues to be used in the development of the next phases of the Tenant Program: the Tenant Site Inspection, and Tenant Follow-up Programs.

Task 2
SARA Title III, Section 313 facility inspection procedures have been researched. No additional tasks were implemented in the 1998/1999 permit year.

Task 3
Marine properties currently conducts a number of tenant inspections. The inspections are multimedia and are conducted by Marine Properties and Environmental staff. The intent of the inspections is to work cooperatively with the tenants. Other Port operating areas may use the Marine inspection program as a model for developing a similar inspection program. The inspection procedures include prioritization of inspections, monitoring requirements, follow-up procedures, and documentation protocols.

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. These operating areas (with the exception of PSY), at a minimum, conduct annual spill training.

PSY reports that all relevant personnel have received spill training, and, therefore, they did not conduct any additional training this year. The spill training dates and attendees are recorded in Table 10. The training emphasizes employee responsibility for preventing releases to the storm system or the receiving waters.

PDX, T-6, and PSY have also developed both stationary and mobile spill kits in order to respond to spills occurring at any location on the site. Marine properties purchased five new spill kits in Spring of 1998. These kits are intended for mobile use and will accompany maintenance workers as they move from terminal to terminal.

Emergency response procedures have been established for PDX, T-6, and PSY, and employees have been trained in the procedures. Spill response procedures are included in Figure 10. 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 lists. The ESD, PDX, and Marine also operate 24-hour hotlines in order to respond to Port property spills at any time.

Implemented Activities

Task 1
The Port will continue to participate in City training events and attend the City's spill response task force meetings.

Task 2
Written materials regarding spills have been distributed at the spill response task force meetings, and have been shared with mangers from the operating areas. 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
Operating area spill response plans have been updated and modified to include all storm water requirements as listed in the 1200-T and 1200-Z permits. Spill prevention and response plans will continue to be reviewed on a regular basis.

Task 4
The co-permittees complying with NPDES storm water industrial permits are required to develop facility spill prevention and response procedures. The tenant surveys provided information about which tenants have plans in place. Once the Port adopts tenant inspection and follow up procedures, tenant spill plans will be reviewed, if required. Any industrial tenants indicating that a spill plan has not been implemented 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 storm water system.

Status/Implemented Activities

Task 1
The written procedures for the Illicit Discharge Detection and Removal Program (IDDRP) Plan were finalized during the 1996/1997 permit year. 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 11); 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.

Task 2
The Port will continue to compile and review all relevant monitoring data for influence of non-storm water discharges. The operating areas, including Cascade General at PSY, are now 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 storm water sample collection and analysis, provide information to determine the presence of illicit discharges and their sources. Review of this year's industrial data supports the conclusion that there are no illicit discharges or connections to the Port's storm water system. Analysis of the storm data from the 1998/1999 permit year showed that 100 percent of the PDX sample results were below the 1200-T benchmarks. Approximately 86 percent of the T-6 and 72 percent of the PSY data results were below 1200-Z benchmarks. It appears likely that storm water quality was not adversely impacted by non-storm water discharges.

The data from the 1996 study and the results from the previous inspections (1991, 1993) were used to determine the Port priority outfalls and the schedule for dry season inspections for the remaining years of permit compliance. Priority outfalls are added to the list throughout the permit term based on new data or inspection results. Review of the previous years of inspection data indicates that most non-storm water discharges were not illicit discharges, but rather permissible discharges, as defined by 40 CFR 122.26 (d)(2)(iv)(B)(1).

Task 3
The IDDRP Plan 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 in the 1993 and 1991 dry season studies, land use designations, and the location of significant material usage on Port properties.

Table 13 contains the 4-year rotating schedule for Port outfall dry season inspections for 1997-2000. The operating areas are currently using this schedule to dictate which outfalls they inspect each year through 2000. The outfalls that have been identified as priority outfalls are inspected every year.

Task 4
The developed IDDRP was transferred to the operating areas for implementation and compliance responsibility. Program transfer occurred during Spring of 1997. The operating areas are responsible for the dry season screening observations, sampling, and investigation work. The observations and inspections are documented on forms specifically developed for the Port IDDRP. The completed observation forms are maintained in the operating area environmental files. The ESD reviews the information and compiles the dry season storm water outfall inspection observation table.

For the 1998-1999 dry season, the operating areas inspected all priority outfalls in their jurisdiction, plus outfalls identified for inspection for the 1998 season. The dry season observation results for the 1998/1999 permit year have been compiled and are included as Table 14. PSY did not submit dry season inspection observations. If a non-storm water discharge is observed, the inspection team collects a sample, completes in field screening analysis, and conducts a follow-up investigation. Samples collected from a non-storm water discharge are analyzed for a list of parameters developed to help identify the source of the possible illicit discharge. Table 15 contains the sample results for the 1998 follow up work conducted.

Task 5
The Port continues to coordinate with the City and DEQ during illicit discharge investigations. The City's illicit discharge elimination program (IDEP) team and the Port continue to work closely, sharing observation and investigation results and information.

Task 6
The Port conducts follow-up actions when necessary. The follow-up and inspection procedures are documented in the IDDRP Plan. The Port intends to use Ordinance 361 to conduct tenant illicit discharge inspections and elimination of any discovered discharges when necessary.

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 continues to coordinate with the City and Metro concerning distribution of hazardous materials training information to Port employees and tenants.

The Port's Risk Management group has completed a Portwide inventory of all hazardous materials used throughout Port operated properties.

Implemented Activities

Task 1
The Port will continue to distribute relevant hazardous waste information obtained from the City and Metro to the Port operating areas. The Tenant Program will provide a means of distributing the Haz Mat training information to Port tenants during training and awareness meetings.

PDX environmental staff and the PDX maintenance group have worked together to improve maintenance 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 maintenance protocols. For example, a toluene recovery system is being built to separate hazardous waste constituents (toluene) from paint, to allow for proper recycling and disposal of paint. The PDX hazardous waste storage area will also be updated. The structural changes to the building will provide even greater protection from a release of hazardous materials.

ILL4 - Illegal Dumping

BMP Description:
Reduce the potential for illegal dumping through active property management.

Status

Response to illegal dumping problems has varied depending on the area of the problem. However, Port operating areas have implemented procedures for dealing with abandoned waste. The Port methods of abandoned waste removal described below continue to be effective management practices.

Implemented Activities

Task 1
Any abandoned solid waste material is removed from Port property and, depending on whether the waste is hazardous or non-hazardous, disposed of by an environmental contractor or by the regular disposal company, respectively. Port staff completes many of the illegal dumping clean ups independently; however, if there is a question about the potential nature of the material, an environmental contract firm is called. Philip Environmental or Foss Environmental characterize the waste. If it is hazardous the environmental contractor removes the waste to the USA Waste Services landfill in Hillsboro.

Task 2
Where possible, fences and locked gates have been constructed to prevent illegal dumping. In some areas it is not possible to block entrances to the Port property, so signs and warnings against illegal dumping have been posted. The Port landscaping crew, along with operating area maintenance personnel, continuously look for abandoned wastes and respond to incidences as quickly as possible.

Task 3
The Port continues to coordinate with DEQ concerning illegal dumping of hazardous waste on Port properties. If hazardous waste is found on Port property, a permit must be obtained from DEQ before the waste can be disposed of at the hazardous waste landfill in Hillsboro. Non-hazardous waste is disposed of by the Port. 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/ Implemented Activities

Task 1
The 1200-CA permit was issued to the Port in the Fall of 1997. The permit covers Portwide construction activities. For Port construction projects of 5 acres or larger, the Port engineer, together with the construction contractor, compiles an erosion control plan based on the 1200-CA requirements and the Port's specifications for erosion control. The erosion control plan is reviewed and approved by BES, as well as Port staff. The Port also requires that erosion control plans be submitted for construction projects with less than 5 acres of soil disturbance. The erosion control plans, for the smaller projects, are reviewed by the Port engineering staff, as well as ESD.

The operating areas continue to conduct erosion control training sessions with Port engineers and Port construction inspectors. The training slides and overhead materials are maintained in the Port MSWMP for use in annual construction inspector training. Erosion control training this permit compliance year was conducted in November of 1998. The operating areas have distributed erosion control and dewatering information to the relevant Port construction employees. The forms to be used during erosion control and dewatering site inspections are included as Figures 12 and 13, respectively.

Erosion control compliance was also addressed in the Portwide tenant meetings. Tenants on Port property that are disturbing 5 acres or more during a construction project are required to obtain a 1200-C NPDES construction permit from BES. Tenant erosion control plans are reviewed by BES prior to project onset. Port staff also review tenant erosion control plans before construction begins.

Task 2
DEQ issued a Dewatering Permit to the Port. The permit allows construction dewatering discharges into the PDX/PIC storm water system with eventual discharge to the Columbia Slough. The ESD and PDX environmental staff have worked together to develop permit compliance procedures. PDX environmental staff are in charge of dewatering sampling, data compilation, and report submission for PDX projects. The ESD provides technical oversight and assistance. The ESD is responsible for managing dewatering projects that occur on PIC property. Tenant construction projects are included in the dewatering permit compliance work and are managed by both PDX staff and ESD.

Dewatering permit compliance procedures include submission of a contractor dewatering plan to ESD and PDX. The plan is reviewed and approved by ESD. For tenant projects, a dewatering agreement is written and signed by the Port and the tenant. Dewatering samples are collected before any initial discharge occurs. The initial sample is analyzed for chemical oxygen demand (COD), total suspended solids (TSS), turbidity, volatile organic compounds (VOCs), total petroleum hydrocarbons, pH, and BETX (benzene, toluene, ethylbenzene, and xylenes). Based on the sampling results, the discharge is treated or discharged to the system. For Port projects, the discharge is sampled monthly at the point of discharge to the Slough. For tenant projects, the discharge is monitored twice monthly, once at the end of the discharge pipe

and once at the point of discharge to the Slough. Data is submitted monthly to DEQ as required by the dewatering permit.

Dewatering procedures have been drafted for Portwide construction projects. The Port Municipal Permit allows the discharge of "pumped uncontaminated ground water" into the storm system. Construction discharges typically fall into the category of a permissible discharge to the storm system. Before discharging to the storm water system, laboratory analyses and visual observations must be conducted and documented to determine if the discharges are uncontaminated. The PDX construction dewatering permit contains benchmarks to determine contamination, and monitoring and reporting requirements for each construction scenario.

The operating areas have completed training of staff concerning dewatering issues and monitoring requirements. Dewatering specifications have been compiled for inclusion in Port construction bid packages. Port construction inspectors completed training in November 1998 regarding implementation of the new dewatering specifications. A copy of the dewatering specifications is included as Figure 14.

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 storm water runoff.

Implemented Activities

Task 1
The Port has been involved in several water quality improvement projects including the Leadbetter and Rivergate water quality facilities, the capture and treatment of PSY dry dock storm water runoff, the sampling and analysis of the deicing 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.

Task 2
Storm water structural BMPs continue to be implemented as needed. The recently implemented Storm Water Discharge BMP in the Marine Tenant Program, for example, calls for fueling, manufacturing, treatment, storage, and disposal areas to be covered to prevent the exposure of potential pollutants to storm water. Also stressed in this BMP is the need for structures that will divert storm water away from these areas.

Several water quality structures have been created during the 1998/1999 permit compliance year. There are presently 170 catch basins being maintained at T-6, and an estimated 20 filters were replaced during the year. A number of tenants have installed wash pads. The pads will prevent any pollutants from vehicle and aircraft washing from impacting the storm water runoff.

Please see the list of BMPs implemented in each operating area during the 1998/1999 compliance year in the Industrial Control BMP discussion above. The monitoring data from the storm water industrial permit compliance efforts indicates the success of these management practices.

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 storm water 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 Association of Clean Water Agencies, 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 (ESA) Coordination Group, and DEQ technical advisory committees.

Implemented Activities

Task 1
The Port continues to coordinate with other government agencies on water quality protection activities relevant to Port properties and activities. The Port has participated in coordinated efforts in a number of pollution control projects, including the Rivergate wetlands. The Port has also participated in the ILL1 Spill Response Task Force meetings and municipal storm water compliance co-permittee meetings.

To comply with the existing municipal storm water NPDES permit and the new Slough TMDLs, as well as to assist with Slough revitalization, Port staff have been working with the City of Portland Bureau of Environmental Services (BES) for over a year to identify practical joint Columbia Slough revitalization efforts. Three actions were recommended and will be implemented in 1999/2000 as a result of these discussions: revegetation of Port property along the Columbia Slough and adjacent sloughs; cost sharing in Slough monitoring required by the municipal NPDES permit, and cost sharing in monitoring required by the Slough TMDLs.

The Port also helped prepare the Marine Department Riverbank Management Plan. The Port is also in the process of developing a Portwide program to address ESA compliance issues. This begins as a review of operational and engineering practices (including storm water) to assure there is not an adverse impact to endangered or threatened species. Findings will provide information so that modifications can be made to assure adequate controls are in place. Potential changes to storm water quality programs are being evaluated in order to improve water quality for endangered species and increase protection and restoration of fish and wildlife habitat.

Task 2
The Port tenants located in the industrial parks and the marine terminals are required to obtain storm water permits either as a co-permittee with the Port or separately. Most of the tenants located at PDX are covered under the Port's storm water industrial permit as co-permittees. The 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 9.

The Port works 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 storm water regulations.

Task 3
The monitoring data collected for Port storm water industrial permit compliance are included in Tables 3-8. Evaluation of the data indicates that the BMPs in place are effective at reducing pollutants in the storm water runoff.

One intent of the BMP monitoring program is to understand in-field effectiveness of commonly used storm water BMPs. Information from this year's monitoring indicates the need for re-evaluation of the BMP effectiveness monitoring program. The sampling instructions will be revised to reflect the modification, and staff will be trained in the new procedures.

M1 - Water Quality Monitoring

BMP Description:
The Port will monitor storm water 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. The completed program components include storm water sample collection and analysis for industrial compliance, storm water wet season visual observations, dry season observations and sampling, and BMP effectiveness monitoring. The other components of the monitoring program that were discussed in the submitted plan include deicing monitoring, tenant monitoring, program analysis and effectiveness, and sample collection instructions.

Storm water sampling accomplished by the Port during the 1998/1999 compliance year includes industrial runoff sampling, deicing sampling, and BMP effectiveness monitoring.

Implemented Activities

The industrial storm water samples where 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. The Port storm water Industrial Permit compliance data are presented in Tables 3-8. Tables 6-8 contain the sampling analysis results for the grab samples collected at T-6, PDX, and PSY, respectively. Tables 3-5 list

calculated pollutant load estimates for the sampled outfalls and storms. The calculations were based on the Rational Method (Q = CIA).

The Port samplers were provided with binders that contained detailed sampling instructions, forms for sample event documentation, and specific site sampling details. A copy of the form developed for use during sampling to record the required information is included as Figure 15. Information from this year's monitoring indicates the need for revision of the BMP effectiveness monitoring program. The sampling instructions will be revised to reflect the modification. Staff will be trained in the new procedures, and the MSWMP will be amended.

The T-6 samples were collected before and after treatment through an oil water separator at the new fuel island. The oil water separator model 660-CPS was selected for the treatment and flow rate capacity. The data for this permit year are included as Table 1.

The PDX samples were collected upstream of two catch basin inlet filters and then down pipe, after filtration. The filters installed are called "Stream Guard" and are designed to remove sediment and oils. Sampling was performed on three different dates. A summary data table is included as Table 2.

The final BMP is a "Stormceptor" unit at a tenant facility on PIC property. The "Stormceptor" unit is located upstream of the outfall to the Columbia Slough. The outfall is a tenant-owned and permitted outfall. The tenant is cooperating with the Port's storm water monitoring efforts. However, no BMP monitoring, set forth in the MSWMP, was conducted at PIC this year. Instead, the Port redirected its efforts to discussing with the City ways to support their monitoring efforts for municipal storm water monitoring as well as TMDL monitoring to be implemented next year. The result of these discussions will be an intergovernmental agreement (IGA) that will be implemented in 1999-2000.

Although several BMP effectiveness samples have been collected in the last two permit years, monitoring procedures need to be re-evaluated. Measuring flow into the BMPs has been particularly problematic, and new methods need to be devised to quantify inflow to allow accurate estimation of pollutant removal effectiveness.

The municipal regulations require sampling to be completed to represent various urban land uses within the permit jurisdiction. The City of Portland's municipal sampling program accomplishes this portion of the regulatory requirement. Port collection of municipal land use samples would be a duplication of effort. The DEQ has agreed that the Port is not required to conduct independent municipal land use storm water monitoring, provided that the Port either redirects its resources or supports the City's monitoring. The Port will be implementing both conditions in the 1999/2000 permit year.

LM1 - Landscape Maintenance Practices

BMP Description:
Review landscaping maintenance practices. Recommend the use of vegetation which reduces the need for pesticides, herbicides, fertilizers, and water where practical.

Status

The Port works with the City to provide landscaping information to the Properties Maintenance crews. Properties Maintenance crews attend local agency meetings and have been working 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. All chemicals are used according to manufacturers' instructions.

Implemented Activities

The environmental staff at each of the operating areas is responsible for input and review of chemical applications in their respective jurisdictions. ESD continues to provide guidance to the operating areas on landscaping issues.

The Port Industrial Properties Maintenance crew is responsible for the landscaping and maintenance of Port industrial properties as well as the marine terminals. This crew incorporates an integrated pest management approach to landscaping. A variety of techniques, including biological controls and alternative plant selection, are used to minimize chemical applications on Port property. Also, intensive field surveys are conducted to accurately assess pest conditions, and thus limit unnecessary chemical applications.

The Industrial Properties Maintenance crew plays an active role in wetland mitigation. The crew was involved in three wetland mitigation projects in the fall of 1998, including the planting and maintenance of wetland vegetation at Marine Terminals 4, 5, and 6.

A Properties Maintenance BMP has been developed relating to storm water discharge. This BMP outlines a standard operating procedure aimed at minimizing pollution entering storm water. Several activities are addressed in this BMP, including chemical spill responses 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 1 Table List

Table 1	Terminal 6 BMP Effectiveness Monitoring Data
Table 2	PDX BMP Effectiveness Monitoring Data
Table 3	Terminal 6 Storm Water Pollutant Load Estimates
Table 4	PDX Storm Water Pollutant Load Estimates
Table 5	PSY Storm Water Pollutant Load Estimates
Table 6	Terminal 6 Industrial Storm Water Data
Table 7	PDX Industrial Storm Water Data
Table 8	PSY Industrial Storm Water Data
Table 9	Port Industrial Tenant NPDES Permit Status
Table 10	Environmental Training Conducted or Attended
Table 11	PDX Storm Water BMP Maintenance Schedule
Table 12	PDX Oil-Water Separator Cleaning Program
Table 13	Port Dry Season Inspection Schedule
Table 14	Dry Season Inspection Results
Table 15	Dry Season Sampling Results

Table 1

BMP Effectiveness Monitoring Data
Terminal 6
Oil Water Separator 660 - CPS

Parameter	Sample Date	Results Inlet Pipe	Results Outlet Pipe	Method	Detection Limit
TSS (mg/L)	8/18/98	77.0	ND	EPA 160.2	10.0
pH	8/18/98	5.90	NA	NA	NA
Oil & Grease (mg/L)	8/18/98	420	ND	EPA 1664	5.00
TPH polar (mg/L)	8/18/98	89.2	NA w/ ND	EPA 1664	NA
TPH non- polar (mg/L)	8/18/98	331	NA w/ ND	EPA 1664	5.00
Benzene (ug/L)	8/18/98	ND	ND	EPA 8020A	0.500
Toluene (ug/L)	8/18/98	0.975	ND	EPA 8020A	0.500
Ethylbenzene (ug/L)	8/18/98	ND	ND	EPA 8020A	0.500
Xylenes (ug/L)	8/18/98	7.62	ND	EPA 8020A	1.00
TSS (mg/L)	5/18/99	708	18.0	EPA 160.2	10.0
pH	5/18/99	7.0	NA	NA	NA
Oil & Grease (mg/L)	5/18/99	434	ND	EPA 1664	5.00
TPH polar (mg/L)	5/18/99	94.2	NA w/ ND	EPA 1664	NA
TPH non- polar (mg/L)	5/18/99	340	NA w/ ND	EPA 1664	5.00
Benzene (ug/L)	5/18/99	ND	ND	EPA 8020A	0.500
Toluene (ug/L)	5/18/99	ND	ND	EPA 8020A	0.500
Ethylbenzene (ug/L)	5/18/99	ND	ND	EPA 8020A	0.500
Xylenes (ug/L)	5/18/99	ND	ND	EPA 8020A	1.00

Results inlet pipe = before treatment through separator
Results outlet pipe = after treatment through separator
NA = not applicable
ND = below the laboratory detection limit

Table 2

BMP Effectiveness Monitoring Data
Portland International Airport, Maintenance Facility
Catch Basin Inlet Filters - "StreamGuard" Type II-O

Parameter	Sample Date	Results Inlet 1	Results Inlet 2	Results Outlet	Method	Detection Limit for Inlets 1 & 2	Detection Limit for Outlet
TSS (mg/L)	7/30/98	29.0	60.0	16.0	EPA 160.2	10.0	10.0
pH	7/30/98	6.0	5.1	5.8	NA	NA	NA
Oil & Grease (mg/L)	7/30/98	ND	ND	ND	EPA 1664	5.00	5.00
TPH polar (mg/L)	7/30/98	NA	NA	NA	EPA 1664	NA	NA
TPH non-polar (mg/L)	7/30/98	NA	NA	NA	EPA 1664	NA	NA
Cadmium (mg/L)	7/30/98	0.00500	0.00600	0.0195	EPA 6020	0.00500	0.00500
Lead (mg/L)	7/30/98	0.0170	0.0165	0.0100	EPA 6020	0.00500	0.00500
Nickel (mg/L)	7/30/98	NA	NA	NA	NA	NA	NA
Zinc (mg/L)	7/30/98	0.725	0.990	1.40	EPA 6020	0.150	1.150
TSS (mg/L)	1/28/99	60.0	33.0	ND	EPA 160.2	10.0	10.0
pH	1/28/99	7.3	6.9	7.1	NA	NA	NA
Oil & Grease (mg/L)	1/28/99	6.23	5.75	ND	EPA 1664	5.00	5.00
TPH polar (mg/L)	1/28/99	2.92	3.40	NA	EPA 1664	NA	NA
TPH non-polar (mg/L)	1/28/99	ND	ND	NA	EPA 1664	5.00	NA
Cadmium (mg/L)	1/28/99	ND	ND	ND	EPA 200.8	0.00400	0.00100
Lead (mg/L)	1/28/99	0.00720	0.00800	0.00230	EPA 200.8	0.00400	0.00100
Nickel (mg/L)	1/28/99	ND	ND	ND	EPA 200.8	0.00800	0.00200
Zinc (mg/L)	1/28/99	0.0495	0.0370	0.151	EPA 200.8	0.0250	0.00500
TSS (mg/L)	6/20/99	23.0	21.0	ND	EPA 160.2	10.0	10.0
pH	6/20/99	8.3	7.3	7.2	NA	NA	NA
Oil & Grease (mg/L)	6/20/99	ND	ND	ND	EPA 1664	5.00	5.00
TPH polar (mg/L)	6/20/99	NA	NA	NA	EPA 1664	NA	NA
TPH non-polar (mg/L)	6/20/99	NA	NA	NA	EPA 1664	NA	NA
Cadmium (mg/L)	6/20/99	0.00260	ND	ND	EPA 6020	0.00100	0.00100
Lead (mg/L)	6/20/99	0.0178	0.00640	0.00310	EPA 6020	0.00100	0.00100
Nickel (mg/L)	6/20/99	0.00860	0.00210	0.00210	EPA 6020	0.00200	0.00200
Zinc (mg/L)	6/20/99	0.179	0.0485	0.356	EPA 6020	0.00500	0.00500

Results inlet 1 and inlet 2 = before treatment through filters
Results outlet manhole = after treatment through filters
NA = not applicable
ND = below the laboratory detection limit

TABLE 3

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATES
TERMINAL 6 (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	Man hole 1	10/12/98	TSS	155	0.9	0.013	60.3	0.684	59100.03	1673712.8	2.59E+08
T-6	Man hole 1	10/12/98	Oil & Grease	ND							
T-6	Man hole 1	10/12/98	Copper	0.0313	0.9	0.013	60.3	0.684	59100.03	1673712.8	52387.21
T-6	Man hole 1	10/12/98	Lead	0.107	0.9	0.013	60.3	0.684	59100.03	1673712.8	179087.3
T-6	Man hole 1	10/12/98	Zinc	0.574	0.9	0.013	60.3	0.684	59100.03	1673712.8	960711.2
T-6	Man hole 1	5/18/99	TSS	49	0.9	0.004	60.3	0.228	19700.01	557904.28	27337310
T-6	Man hole 1	5/18/99	Oil & Grease	ND							
T-6	Man hole 1	5/18/99	Copper	0.0318	0.9	0.004	60.3	0.228	19700.01	557904.28	17741.36
T-6	Man hole 1	5/18/99	Lead	0.0923	0.9	0.004	60.3	0.228	19700.01	557904.28	51494.57
T-6	Man hole 1	5/18/99	Zinc	0.615	0.9	0.004	60.3	0.228	19700.01	557904.28	343111.1
T-6	Man hole 2	10/12/98	TSS	19	0.9	0.013	60.3	0.684	59100.03	1673712.8	31800544
T-6	Man hole 2	10/12/98	Oil & Grease	ND							
T-6	Man hole 2	10/12/98	Copper	0.0112	0.9	0.013	60.3	0.684	59100.03	1673712.8	18745.58
T-6	Man hole 2	10/12/98	Lead	0.0105	0.9	0.013	60.3	0.684	59100.03	1673712.8	17573.98
T-6	Man hole 2	10/12/98	Zinc	0.0901	0.9	0.013	60.3	0.684	59100.03	1673712.8	150801.5
T-6	Man hole 2	5/18/99	TSS	36	0.9	0.004	60.3	0.228	19700.01	557904.28	20084554
T-6	Man hole 2	5/18/99	Oil & Grease	ND							
T-6	Man hole 2	5/18/99	Copper	0.0231	0.9	0.004	60.3	0.228	19700.01	557904.28	12887.59
T-6	Man hole 2	5/18/99	Lead	0.0123	0.9	0.004	60.3	0.228	19700.01	557904.28	6862.223
T-6	Man hole 2	5/18/99	Zinc	0.101	0.9	0.004	60.3	0.228	19700.01	557904.28	56348.33

ND=Non Detect, below laboratory detection limit

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TABLE 3

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATES
TERMINAL 6 (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	Man hole 3	10/12/98	TSS	337	0.9	0.013	60.3	0.684	59100.03	1673712.8	5.64E+08
T-6	Man hole 3	10/12/98	Oil & Grease	1.32	0.9	0.013	60.3	0.684	59100.03	1673712.8	2209301
T-6	Man hole 3	10/12/98	Copper	0.0816	0.9	0.013	60.3	0.684	59100.03	1673712.8	136575
T-6	Man hole 3	10/12/98	Lead	0.255	0.9	0.013	60.3	0.684	59100.03	1673712.8	426796.8
T-6	Man hole 3	10/12/98	Zinc	0.975	0.9	0.013	60.3	0.684	59100.03	1673712.8	1631870
T-6	Man hole 3	5/17/99	TSS	54	0.9	0.021	60.3	1.140	98500.05	2789521.4	1.51E+08
T-6	Man hole 3	5/17/99	Oil & Grease	ND							
T-6	Man hole 3	5/17/99	Copper	0.207	0.9	0.021	60.3	1.140	98500.05	2789521.4	577430.9
T-6	Man hole 3	5/17/99	Lead	0.103	0.9	0.021	60.3	1.140	98500.05	2789521.4	287320.7
T-6	Man hole 3	5/17/99	Zinc	0.623	0.9	0.021	60.3	1.140	98500.05	2789521.4	1737872
T-6	Man hole 4	5/17/99	TSS	ND							
T-6	Man hole 4	5/17/99	Oil & Grease	ND							
T-6	Man hole 4	5/17/99	Copper	0.00460	0.9	0.021	45	0.851	73507.5	2081732.4	9575.969
T-6	Man hole 4	5/17/99	Lead	0.00150	0.9	0.021	45	0.851	73507.5	2081732.4	3122.599
T-6	Man hole 4	5/17/99	Zinc	0.0637	0.9	0.021	45	0.851	73507.5	2081732.4	132606.4

ND=Non Detect, below laboratory detection limit

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TABLE 4

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATE
PORTLAND INTERNATIONAL AIRPORT (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	11/15/98	COD	21.5	0.225	0.009	1029	2.043	176491.5	4998239.5	107462149
PDX	Basin 1	11/15/98	TSS	10.0	0.225	0.009	1029	2.043	176491.5	4998239.5	49982395
PDX	Basin 1	11/15/98	Oil & Grease	0.321	0.225	0.009	1029	2.043	176491.5	4998239.5	1604435
PDX	Basin 1	11/15/98	Phosphorus	0.230	0.225	0.009	1029	2.043	176491.5	4998239.5	1149595
PDX	Basin 1	11/15/98	TOC	ND							
PDX	Basin 1	11/15/98	Arsenic	0.00130	0.225	0.009	1029	2.043	176491.5	4998239.5	6498
PDX	Basin 1	11/15/98	Cadmium	ND							
PDX	Basin 1	11/15/98	Chromium	ND							
PDX	Basin 1	11/15/98	Copper	0.00420	0.225	0.009	1029	2.043	176491.5	4998239.5	20993
PDX	Basin 1	11/15/98	Lead	0.00100	0.225	0.009	1029	2.043	176491.5	4998239.5	4998
PDX	Basin 1	11/15/98	Mercury	ND							
PDX	Basin 1	11/15/98	Nickel	0.00240	0.225	0.009	1029	2.043	176491.5	4998239.5	11996
PDX	Basin 1	11/15/98	Zinc	0.0430	0.225	0.009	1029	2.043	176491.5	4998239.5	214924
PDX	Basin 1	6/7/99	COD	15.8	0.225	0.007	1029	1.556	134469.7	3808182.5	60169283
PDX	Basin 1	6/7/99	TSS	43.0	0.225	0.007	1029	1.556	134469.7	3808182.5	163751846
PDX	Basin 1	6/7/99	Oil & Grease	ND							
PDX	Basin 1	6/7/99	Phosphorus	ND							
PDX	Basin 1	6/7/99	TOC	9.34	0.225	0.007	1029	1.556	134469.7	3808182.5	35568424
PDX	Basin 1	6/7/99	Arsenic	0.00200	0.225	0.007	1029	1.556	134469.7	3808182.5	7616
PDX	Basin 1	6/7/99	Cadmium	ND							
PDX	Basin 1	6/7/99	Chromium	ND							
PDX	Basin 1	6/7/99	Copper	0.00820	0.225	0.007	1029	1.556	134469.7	3808182.5	31227
PDX	Basin 1	6/7/99	Lead	0.00100	0.225	0.007	1029	1.556	134469.7	3808182.5	3808
PDX	Basin 1	6/7/99	Mercury	ND							
PDX	Basin 1	6/7/99	Nickel	0.0114	0.225	0.007	1029	1.556	134469.7	3808182.5	43413
PDX	Basin 1	6/7/99	Zinc	0.0666	0.225	0.007	1029	1.556	134469.7	3808182.5	253625

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.

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TABLE 4

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATES
PORTLAND INTERNATIONAL AIRPORT (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 2	11/15/98	COD	15.1	0.525	0.009	250	1.158	100051.9	2833469.1	42785383.41
PDX	Basin 2	11/15/98	TSS	ND							
PDX	Basin 2	11/15/98	Oil & Grease	0.785	0.525	0.009	250	1.158	100051.9	2833469.1	2224273.244
PDX	Basin 2	11/15/98	Phosphorus	0.126	0.525	0.009	250	1.158	100051.9	2833469.1	357017.1066
PDX	Basin 2	11/15/98	TOC	ND							
PDX	Basin 2	11/15/98	Arsenic	ND							
PDX	Basin 2	11/15/98	Cadmium	ND							
PDX	Basin 2	11/15/98	Chromium	0.00100	0.525	0.009	250	1.158	100051.9	2833469.1	2833.4691
PDX	Basin 2	11/15/98	Copper	0.00750	0.525	0.009	250	1.158	100051.9	2833469.1	21251.01825
PDX	Basin 2	11/15/98	Lead	0.00130	0.525	0.009	250	1.158	100051.9	2833469.1	3683.50983
PDX	Basin 2	11/15/98	Mercury	ND							
PDX	Basin 2	11/15/98	Nickel	ND							
PDX	Basin 2	11/15/98	Zinc	0.0639	0.525	0.009	250	1.158	100051.9	2833469.1	181058.6755
PDX	Basin 2	6/7/99	COD	24.0	0.525	0.007	250	0.882	76230	2158833.6	51812006.4
PDX	Basin 2	6/7/99	TSS	14.0	0.525	0.007	250	0.882	76230	2158833.6	30223670.4
PDX	Basin 2	6/7/99	Oil & Grease	1.35	0.525	0.007	250	0.882	76230	2158833.6	2914425.36
PDX	Basin 2	6/7/99	Phosphorus	ND							
PDX	Basin 2	6/7/99	TOC	12.0	0.525	0.007	250	0.882	76230	2158833.6	25906003.2
PDX	Basin 2	6/7/99	Arsenic	0.00160	0.525	0.007	250	0.882	76230	2158833.6	3454.13376
PDX	Basin 2	6/7/99	Cadmium	ND							
PDX	Basin 2	6/7/99	Chromium	0.00120	0.525	0.007	250	0.882	76230	2158833.6	2590.60032
PDX	Basin 2	6/7/99	Copper	0.0142	0.525	0.007	250	0.882	76230	2158833.6	30655.43712
PDX	Basin 2	6/7/99	Lead	0.00380	0.525	0.007	250	0.882	76230	2158833.6	8203.56768
PDX	Basin 2	6/7/99	Mercury	ND							
PDX	Basin 2	6/7/99	Nickel	0.00210	0.525	0.007	250	0.882	76230	2158833.6	4533.55056
PDX	Basin 2	6/7/99	Zinc	0.0755	0.525	0.007	250	0.882	76230	2158833.6	162991.9368

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.

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TABLE 4 **INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATES**
PORTLAND INTERNATIONAL AIRPORT (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 4	11/15/98	COD	5.77	0.525	0.009	49	0.227	19610.17	555359.94	3204427
PDX	Basin 4	11/15/98	TSS	414	0.525	0.009	49	0.227	19610.17	555359.94	2.3E+08
PDX	Basin 4	11/15/98	Oil & Grease	0.820	0.525	0.009	49	0.227	19610.17	555359.94	455395.2
PDX	Basin 4	11/15/98	Phosphorus	0.0908	0.525	0.009	49	0.227	19610.17	555359.94	50426.68
PDX	Basin 4	11/15/98	TOC	ND							
PDX	Basin 4	11/15/98	Arsenic	ND							
PDX	Basin 4	11/15/98	Cadmium	ND							
PDX	Basin 4	11/15/98	Chromium	ND							
PDX	Basin 4	11/15/98	Copper	0.00450	0.525	0.009	49	0.227	19610.17	555359.94	2499.12
PDX	Basin 4	11/15/98	Lead	ND							
PDX	Basin 4	11/15/98	Mercury	ND							
PDX	Basin 4	11/15/98	Nickel	ND							
PDX	Basin 4	11/15/98	Zinc	0.0757	0.525	0.009	49	0.227	19610.17	555359.94	42040.75
PDX	Basin 4	6/7/99	COD	34.6	0.525	0.007	49	0.173	14941.08	423131.39	14640346
PDX	Basin 4	6/7/99	TSS	25.0	0.525	0.007	49	0.173	14941.08	423131.39	10578285
PDX	Basin 4	6/7/99	Oil & Grease	1.46	0.525	0.007	49	0.173	14941.08	423131.39	617771.8
PDX	Basin 4	6/7/99	Phosphorus	ND							
PDX	Basin 4	6/7/99	TOC	17.4	0.525	0.007	49	0.173	14941.08	423131.39	7362486
PDX	Basin 4	6/7/99	Arsenic	0.00290	0.525	0.007	49	0.173	14941.08	423131.39	1227.081
PDX	Basin 4	6/7/99	Cadmium	ND							
PDX	Basin 4	6/7/99	Chromium	0.00140	0.525	0.007	49	0.173	14941.08	423131.39	592.3839
PDX	Basin 4	6/7/99	Copper	0.0260	0.525	0.007	49	0.173	14941.08	423131.39	11001.42
PDX	Basin 4	6/7/99	Lead	0.00350	0.525	0.007	49	0.173	14941.08	423131.39	1480.96
PDX	Basin 4	6/7/99	Mercury	ND							
PDX	Basin 4	6/7/99	Nickel	0.00500	0.525	0.007	49	0.173	14941.08	423131.39	2115.657
PDX	Basin 4	6/7/99	Zinc	0.0949	0.525	0.007	49	0.173	14941.08	423131.39	40155.17

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.
s:/proj95/955059ny/AnnlRpt/98-99data/Pdxload99.xls 8/16/99

TABLE 4

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATES
PORTLAND INTERNATIONAL AIRPORT (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 6	11/15/98	COD	39.4	0.643	0.009	476	2.700	233315.6	6607498.8	260335453.6
PDX	Basin 6	11/15/98	TSS	ND							
PDX	Basin 6	11/15/98	Oil & Grease	0.788	0.643	0.009	476	2.700	233315.6	6607498.8	5206709.072
PDX	Basin 6	11/15/98	Phosphorus	0.208	0.643	0.009	476	2.700	233315.6	6607498.8	1374359.755
PDX	Basin 6	11/15/98	TOC	ND							
PDX	Basin 6	11/15/98	Arsenic	0.00140	0.643	0.009	476	2.700	233315.6	6607498.8	9250.498352
PDX	Basin 6	11/15/98	Cadmium	ND							
PDX	Basin 6	11/15/98	Chromium	0.00100	0.643	0.009	476	2.700	233315.6	6607498.8	6607.498823
PDX	Basin 6	11/15/98	Copper	0.0113	0.643	0.009	476	2.700	233315.6	6607498.8	74664.7367
PDX	Basin 6	11/15/98	Lead	0.00200	0.643	0.009	476	2.700	233315.6	6607498.8	13214.99765
PDX	Basin 6	11/15/98	Mercury	ND							
PDX	Basin 6	11/15/98	Nickel	0.00240	0.643	0.009	476	2.700	233315.6	6607498.8	15857.99717
PDX	Basin 6	11/15/98	Zinc	0.131	0.643	0.009	476	2.700	233315.6	6607498.8	865582.3458
PDX	Basin 6	6/7/99	COD	17.3	0.643	0.007	476	2.057	177764.3	5034284.8	9E+07
PDX	Basin 6	6/7/99	TSS	14.0	0.643	0.007	476	2.057	177764.3	5034284.8	7E+07
PDX	Basin 6	6/7/99	Oil & Grease	0.840	0.643	0.007	476	2.057	177764.3	5034284.8	4E+06
PDX	Basin 6	6/7/99	Phosphorus	ND							
PDX	Basin 6	6/7/99	TOC	10.7	0.643	0.007	476	2.057	177764.3	5034284.8	5E+07
PDX	Basin 6	6/7/99	Arsenic	0.00250	0.643	0.007	476	2.057	177764.3	5034284.8	1E+04
PDX	Basin 6	6/7/99	Cadmium	ND							
PDX	Basin 6	6/7/99	Chromium	ND							
PDX	Basin 6	6/7/99	Copper	0.00850	0.643	0.007	476	2.057	177764.3	5034284.8	4E+04
PDX	Basin 6	6/7/99	Lead	ND							
PDX	Basin 6	6/7/99	Mercury	ND							
PDX	Basin 6	6/7/99	Nickel	0.00250	0.643	0.007	476	2.057	177764.3	5034284.8	12585.71204
PDX	Basin 6	6/7/99	Zinc	0.0279	0.643	0.007	476	2.057	177764.3	5034284.8	140456.5464

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.

s:/proj95/955059ny/AnnlRpt/98-99data/Pdxload99.xls 8/16/99

TABLE 4

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATE
PORTLAND INTERNATIONAL AIRPORT (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 7	11/15/98	COD	16.3	0.6	0.009	725	3.838	331600.5	9390926.2	1.53E+08
PDX	Basin 7	11/15/98	TSS	ND							
PDX	Basin 7	11/15/98	Oil & Grease	0.679	0.6	0.009	725	3.838	331600.5	9390926.2	6376439
PDX	Basin 7	11/15/98	Phosphorus	0.133	0.6	0.009	725	3.838	331600.5	9390926.2	1248993
PDX	Basin 7	11/15/98	TOC	ND							
PDX	Basin 7	11/15/98	Arsenic	ND							
PDX	Basin 7	11/15/98	Cadmium	ND							
PDX	Basin 7	11/15/98	Chromium	0.00110	0.6	0.009	725	3.838	331600.5	9390926.2	10330.02
PDX	Basin 7	11/15/98	Copper	0.00900	0.6	0.009	725	3.838	331600.5	9390926.2	84518.34
PDX	Basin 7	11/15/98	Lead	0.00290	0.6	0.009	725	3.838	331600.5	9390926.2	27233.69
PDX	Basin 7	11/15/98	Mercury	ND							
PDX	Basin 7	11/15/98	Nickel	ND							
PDX	Basin 7	11/15/98	Zinc	0.166	0.6	0.009	725	3.838	331600.5	9390926.2	1558894
PDX	Basin 7	6/7/99	COD	30.1	0.6	0.007	725	2.924	252648	7154991.4	2.15E+08
PDX	Basin 7	6/7/99	TSS	17.0	0.6	0.007	725	2.924	252648	7154991.4	1.22E+08
PDX	Basin 7	6/7/99	Oil & Grease	1.00	0.6	0.007	725	2.924	252648	7154991.4	7154991
PDX	Basin 7	6/7/99	Phosphorus	0.176	0.6	0.007	725	2.924	252648	7154991.4	1259278
PDX	Basin 7	6/7/99	TOC	12.3	0.6	0.007	725	2.924	252648	7154991.4	88006394
PDX	Basin 7	6/7/99	Arsenic	0.00120	0.6	0.007	725	2.924	252648	7154991.4	8585.99
PDX	Basin 7	6/7/99	Cadmium	ND							
PDX	Basin 7	6/7/99	Chromium	0.00110	0.6	0.007	725	2.924	252648	7154991.4	7870.49
PDX	Basin 7	6/7/99	Copper	0.0152	0.6	0.007	725	2.924	252648	7154991.4	108755.9
PDX	Basin 7	6/7/99	Lead	0.00330	0.6	0.007	725	2.924	252648	7154991.4	23611.47
PDX	Basin 7	6/7/99	Mercury	ND							
PDX	Basin 7	6/7/99	Nickel	0.00280	0.6	0.007	725	2.924	252648	7154991.4	20033.98
PDX	Basin 7	6/7/99	Zinc	0.116	0.6	0.007	725	2.924	252648	7154991.4	829979

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.

s:/proj95/955059ny/AnnlRpt/98-99data/Pdxload99.xls 8/1

TABLE 4

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATE
PORTLAND INTERNATIONAL AIRPORT (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 8	11/15/98	COD	26.3	0.297	0.009	679	1.779	153727.7	4353568.6	1.14E+08
PDX	Basin 8	11/15/98	TSS	ND							
PDX	Basin 8	11/15/98	Oil & Grease	0.422	0.297	0.009	679	1.779	153727.7	4353568.6	1837206
PDX	Basin 8	11/15/98	Phosphorus	0.209	0.297	0.009	679	1.779	153727.7	4353568.6	909895.8
PDX	Basin 8	11/15/98	TOC	ND							
PDX	Basin 8	11/15/98	Arsenic	0.00180	0.297	0.009	679	1.779	153727.7	4353568.6	7836.423
PDX	Basin 8	11/15/98	Cadmium	ND							
PDX	Basin 8	11/15/98	Chromium	ND							
PDX	Basin 8	11/15/98	Copper	0.00580	0.297	0.009	679	1.779	153727.7	4353568.6	25250.7
PDX	Basin 8	11/15/98	Lead	0.00170	0.297	0.009	679	1.779	153727.7	4353568.6	7401.067
PDX	Basin 8	11/15/98	Mercury	ND							
PDX	Basin 8	11/15/98	Nickel	0.00340	0.297	0.009	679	1.779	153727.7	4353568.6	14802.13
PDX	Basin 8	11/15/98	Zinc	0.121	0.297	0.009	679	1.779	153727.7	4353568.6	526781.8
PDX	Basin 8	6/7/99	COD	23.4	0.297	0.007	679	1.356	117125.9	3317004.65	77617909
PDX	Basin 8	6/7/99	TSS	19.0	0.297	0.007	679	1.356	117125.9	3317004.65	63023088
PDX	Basin 8	6/7/99	Oil & Grease	0.378	0.297	0.007	679	1.356	117125.9	3317004.65	1253828
PDX	Basin 8	6/7/99	Phosphorus	ND							
PDX	Basin 8	6/7/99	TOC	13.5	0.297	0.007	679	1.356	117125.9	3317004.65	44779563
PDX	Basin 8	6/7/99	Arsenic	0.00190	0.297	0.007	679	1.356	117125.9	3317004.65	6302.309
PDX	Basin 8	6/7/99	Cadmium	ND							
PDX	Basin 8	6/7/99	Chromium	ND							
PDX	Basin 8	6/7/99	Copper	0.00560	0.297	0.007	679	1.356	117125.9	3317004.65	18575.23
PDX	Basin 8	6/7/99	Lead	0.00100	0.297	0.007	679	1.356	117125.9	3317004.65	3317.005
PDX	Basin 8	6/7/99	Mercury	ND							
PDX	Basin 8	6/7/99	Nickel	0.00350	0.297	0.007	679	1.356	117125.9	3317004.65	11609.52
PDX	Basin 8	6/7/99	Zinc	0.0150	0.297	0.007	679	1.356	117125.9	3317004.65	49755.07

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.

s:/proj95/955059ny/AnnlRpt/98-99data/Pdxload99.xls 8/16/99

TABLE 5

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATES
PORTLAND SHIP REPAIR YARD (PSY)

LOAD CALCULATIONS BASED ON Q=CIA											
Location	Outfall	Date	Pollutant	Amount (mg/L)	Runoff coeffic. C	Intensity I (in/hr)	Area *A (acres)	Runoff Q (ft^3/sec)	Volume (ft^3)	Volume (liters)	Load (mg)
PSY	Basin 2	11/10/98	COD	26.9	0.9	0.003	5.8	0.02	1524	43152	1160789
PSY	Basin 2	11/10/98	TSS	ND10							
PSY	Basin 2	11/10/98	Oil & Grease	ND5							
PSY	Basin 2	11/10/98	TOC	4.57	0.9	0.003	5.8	0.02	1524	43152	197205
PSY	Basin 2	11/10/98	Arsenic	ND0.001							
PSY	Basin 2	11/10/98	Cadmium	ND0.001							
PSY	Basin 2	11/10/98	Chromium	0.0011	0.9	0.003	5.8	0.02	1524	43152	47
PSY	Basin 2	11/10/98	Copper	0.233	0.9	0.003	5.8	0.02	1524	43152	10054
PSY	Basin 2	11/10/98	Lead	0.0099	0.9	0.003	5.8	0.02	1524	43152	427
PSY	Basin 2	11/10/98	Mercury	ND0.0002							
PSY	Basin 2	11/10/98	Nickel	0.0086	0.9	0.003	5.8	0.02	1524	43152	371
PSY	Basin 2	11/10/98	Zinc	1.06	0.9	0.003	5.8	0.02	1524	43152	45741

*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.
s:/proj95/955059ny/AnnlRpt/98-99data/Psy-ar99.xls

TABLE 5

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATES
PORTLAND SHIP REPAIR YARD (PSY)

LOAD CALCULATIONS BASED ON Q=CIA											
Location	Outfall	Date	Pollutant	Amount (mg/L)	Runoff coeffic. C	Intensity I (in/hr)	Area *A (acres)	Runoff Q (ft3/sec)	Volume (ft3)	Volume (liters)	Load (mg)
PSY	Basin 9	11/10/98	COD	16	0.9	0.003	1.51	0.005	395	11177	178825
PSY	Basin 9	11/10/98	TSS	ND10							
PSY	Basin 9	11/10/98	Oil & Grease	ND5							
PSY	Basin 9	11/10/98	TOC	4.76	0.9	0.003	1.51	0.005	395	11177	53201
PSY	Basin 9	11/10/98	Arsenic	ND0.001							
PSY	Basin 9	11/10/98	Cadmium	ND0.001							
PSY	Basin 9	11/10/98	Chromium	ND0.001							
PSY	Basin 9	11/10/98	Copper	0.194	0.9	0.003	1.51	0.005	395	11177	2168
PSY	Basin 9	11/10/98	Lead	0.0014	0.9	0.003	1.51	0.005	395	11177	16
PSY	Basin 9	11/10/98	Mercury	ND0.0002							
PSY	Basin 9	11/10/98	Nickel	0.0039	0.9	0.003	1.51	0.005	395	11177	44
PSY	Basin 9	11/10/98	Zinc	1.02	0.9	0.003	1.51	0.005	395	11177	11400

*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.
s:/proj95/955059ny/AnnlRpt/98-99data/Psy-ar99.xls

TABLE 5

INDUSTRIAL STORM WATER MONITORING POLLUTANT LOAD ESTIMATE
PORTLAND SHIP REPAIR YARD (PSY)

LOAD CALCULATIONS BASED ON Q=CIA											
Location	Outfall	Date	Pollutant	Amount (mg/L)	Runoff coeffic. C	Intensity I (in/hr)	Area *A (acres)	Runoff Q (ft^3/sec)	Volume (ft^3)	Volume (liters)	Load (mg)
PSY	Basin 12	11/10/98	COD	19.2	0.9	0.003	9.3	0.028	2418	68466	1314545
PSY	Basin 12	11/10/98	TSS	ND10							
PSY	Basin 12	11/10/98	Oil & Grease	ND5							
PSY	Basin 12	11/10/98	TOC	4.24	0.9	0.003	9.3	0.028	2418	68466	290295
PSY	Basin 12	11/10/98	Arsenic	0.001	0.9	0.003	9.3	0.028	2418	68466	68
PSY	Basin 12	11/10/98	Cadmium	ND0.001							
PSY	Basin 12	11/10/98	Chromium	0.002	0.9	0.003	9.3	0.028	2418	68466	137
PSY	Basin 12	11/10/98	Copper	0.0962	0.9	0.003	9.3	0.028	2418	68466	6586
PSY	Basin 12	11/10/98	Lead	0.0021	0.9	0.003	9.3	0.028	2418	68466	144
PSY	Basin 12	11/10/98	Mercury	ND0.0002							
PSY	Basin 12	11/10/98	Nickel	0.0221	0.9	0.003	9.3	0.028	2418	68466	1513
PSY	Basin 12	11/10/98	Zinc	0.673	0.9	0.003	9.3	0.028	2418	68466	46078

*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.
s:/proj95/955059ny/AnnlRpt/98-99data/Psy-ar99.xls

TABLE 6

STORMWATER MONITORING DATA REPORT 1998 - 1999

Stormwater Discharge Permit 1200-Z

Port of Portland - Marine Terminal 6 **7201 N. Marine Drive, Portland Oregon 97203**

Location: T-6 Outfall L - MH 1 (B605)

Parameters:	EPA Method	MRL	Permit Benchmark	1st Sampling 12-Oct-98	2nd Sampling 18-May-99
Total Suspended Solids, TSS, (ppm)	160.2	10	130 mg/l	155	49
pH level	----	----	5.5 - 9 S.U.	6.6	6.7
Oil and Grease	413.1	5	10 mg/l	ND	ND
Metals (ppm): Total					
Copper	6010A	0.005	0.1 mg/l	0.0313	0.0318
Lead	7421	0.002	0.4 mg/l	0.107	0.0923
Zinc	6010A	0.01	0.6 mg/l	0.574	0.615
Visual Observations:					
Color	----	----	----	Dirty	Dirty
Foam/Debris	----	----	No Visible	ND	ND
Oil/Grease Sheen	----	----	No Visible	ND	Slight
Rainfall Flow	----	----	----	2.0"	1.0"
Who Performed Sampling:	----	----	----	TD	TD/NY
Time Samples Taken:	----	----	----	10:45 AM	1:00 PM
Who Performed Analysis:	----	----	----	NCA/P810265	NCA/P905344
Date Received:	----	----	----	10/13/98	5/18/99

Notes: NCA=North Creek Analytical; TD= Tom Dean; NY= Nancy Yunker

Location: T-6 Outfall M - MH 2 (CDC)

Parameters:	EPA Method	MRL	Permit Benchmark	1st Sampling 12-Oct-98	2nd Sampling 18-May-99
Total Suspended Solids, TSS, (ppm)	160.2	10	130 mg/l	19	36
pH level	----	----	5.5 - 9 S.U.	6.6	6.5
Oil and Grease	413.1	5	10 mg/l	ND	ND
Metals (ppm): Total					
Copper	6010A	0.005	0.1 mg/l	0.0112	0.0231
Lead	7421	0.002	0.4 mg/l	0.0105	0.0123
Zinc	6010A	0.01	0.6 mg/l	0.0901	0.101
Visual Observations:					
Color	----	----	----	Slightly Dirty	Slightly Dirty
Foam/Debris	----	----	No Visible	ND	ND
Oil/Grease Sheen	----	----	No Visible	ND	ND
Rainfall Flow	----	----	----	1" Flow	1.0"
Who Performed Sampling:	----	----	----	TD	TD/NY
Time Samples Taken:	----	----	----	11:10 AM	3:00 PM
Who Performed Analysis:	----	----	----	NCA/P810265	NCA/P905344
Date Received:	----	----	----	10/13/98	5/18/99

Notes: NCA=North Creek Analytical; TD = Tom Dean; NY= Nancy Yunker

TABLE 6

Stormwater Monitoring Data Report for 1998-1999

Location: T-6 Outfall O - MH 3 (B603)

Parameters:	EPA Method	MRL	Permit Benchmark	1st Sampling 12-Oct-98	2nd Sampling 17-May-99
Total Suspended Solids, TSS, (ppm)	160.2	10	130 mg/l	337	54
pH level	----	----	5.5 - 9 S.U.	6.8	6.4
Oil and Grease	413.1	5	10 mg/l	1.32	ND
Metals (ppm): Total					
Copper	6010A	0.005	0.1 mg/l	0.0816	**0.207**
Lead	7421	0.002	0.4 mg/l	0.255	0.103
Zinc	6010A	0.01	0.6 mg/l	**0.975**	**0.623**
Visual Observations:					
Color	----	----	----	Very Dirty	Dirty
Foam/Debris	----	----	No Visible	ND	ND
Oil/Grease Sheen	----	----	No Visible	ND	ND
Rainfall Flow	----	----	----	1.5" Flow	1.0"
Who Performed Sampling:	----	----	----	TD	TD/NY
Time Samples Taken:	----	----	----	11:20 AM	12:45 PM
Who Performed Analysis:	----	----	----	NCA/P810265	NCA/P905344
Date Received:	----	----	----	10/13/98	5/18/99

Notes: NCA=North Creek Analytical; TD = Tom Dean; NY= Nancy Yunker

Location: T-6 Outfall K - MH 4 (B606)

Parameters:	EPA Method	MRL	Permit Benchmark	1st Sampling NA	2nd Sampling 17-May-99
Total Suspended Solids, TSS, (ppm)	160.2	10	130 mg/l	----	ND
pH level	----	----	5.5 - 9 S.U.	----	6.7
Oil and Grease	413.1	5	10 mg/l	----	ND
Metals (ppm): Total					
Copper	6010A	0.005	0.1 mg/l	----	0.00460
Lead	7421	0.002	0.4 mg/l	----	0.00150
Zinc	6010A	0.01	0.6 mg/l	----	0.0637
Visual Observations:					
Color	----	----	----	----	Clear
Foam/Debris	----	----	No Visible	----	ND
Oil/Grease Sheen	----	----	No Visible	----	ND
Rainfall Flow	----	----	----	----	1.0"
Who Performed Sampling:	----	----	----	----	TD/NY
Time Samples Taken:	----	----	----	----	2:50 PM
Who Performed Analysis:	----	----	----	----	NCA/P905344
Date Received:	----	----	----	----	5/18/99

Notes: NCA=North Creek Analytical; TD = Tom Dean; NY= Nancy Yunker

TABLE 7

1998-1999 1200T NPDES STORMWATER DISCHARGE PERMIT SCHEDULE B MONITORING REPORT

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 Benchmarks	Fall Sampling Event November 15, 1998	Spring Sampling Event June 7, 1999
General Chemistry:		Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	NA	414	25.0
Total Phosphorus	EPA 365.3	0.0350	NA	0.0908	ND
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	NA	5.77	34.6
Total Organic Carbon (TOC)	EPA 415.1	3.00	NA	ND	17.4
Oil and Grease	NWTPH-Dx	0.250 (C_{10}-C_{28})	10	0.820	1.46
		0.500 (>C_{28})	10	0.710	1.40
pH	NA	NA	6.0 to 9.0	6.9	7.1
Total Metals:					
Arsenic	EPA 200.8	0.00100	NA	ND	0.00290
Cadmium	EPA 200.8	0.00100	NA	ND	ND
Chromium	EPA 200.8	0.00100	NA	ND	0.00140
Copper	EPA 200.8	0.00200	NA	0.00450	0.0260
Lead	EPA 200.8	0.00100	NA	ND	0.00350
Mercury	EPA 245.1	0.000200	NA	ND	ND
Nickel	EPA 200.8	0.00200	NA	ND	0.00500
Zinc	EPA 200.8	0.00500	NA	0.0757	0.0949

Notes:

Chemical analyses by North Creek Analytical, Beaverton, Oregon.
pH measured in field using a Oakton® pHTestr 2 meter and is reported in standard pH units.
NA = Not applicable or not established.
ND = Not detected at the method reporting limit.
NWTPH-Dx analysis conducted without organic cleanup.

TABLE 7

1998-1999 1200T NPDES STORMWATER DISCHARGE PERMIT SCHEDULE B MONITORING DATA REPORT

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 Benchmarks	Fall Sampling Event November 15, 1998	Spring Sampling Event June 7, 1999
General Chemistry:		Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	NA	10.0	43.0
Total Phosphorus	EPA 365.3	0.0350	NA	0.230	ND
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	NA	21.5	15.8
Total Organic Carbon (TOC)	EPA 415.1	3.00	NA	ND	9.34
Oil and Grease	NWTPH-Dx	0.250 (C_{10}-C_{28})	10	0.321	ND
		0.500 (>C_{28})	10	ND	ND
pH	NA	NA	6.0 to 9.0	7.0	7.2
Total Metals:					
Arsenic	EPA 200.8	0.00100	NA	0.00130	0.00200
Cadmium	EPA 200.8	0.00100	NA	ND	ND
Chromium	EPA 200.8	0.00100	NA	ND	ND
Copper	EPA 200.8	0.00200	NA	0.00420	0.00820
Lead	EPA 200.8	0.00100	NA	0.00100	0.00100
Mercury	EPA 245.1	0.000200	NA	ND	ND
Nickel	EPA 200.8	0.00200	NA	0.00240	0.0114
Zinc	EPA 200.8	0.00500	NA	0.0430	0.0666

Notes:

Chemical analyses by North Creek Analytical, Beaverton, Oregon.
pH measured in field using a Oakton® pHTestr 2 meter and is reported in standard pH units.
NA = Not applicable or not established.
ND = Not detected at the method reporting limit.
NWTPH-Dx analysis conducted without organic cleanup.

TABLE 7

1998-1999 1200T NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING DATA REPORT

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 Benchmarks	Fall Sampling Event November 15, 1998	Spring Sampling Event June 7, 1999
General Chemistry:		Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	NA	ND	14.0
Total Phosphorus	EPA 365.3	0.0350	NA	0.126	ND
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	NA	15.1	24.0
Total Organic Carbon (TOC)	EPA 415.1	3.00	NA	ND	12.0
Oil and Grease	NWTPH-Dx	0.250 (C_{10}-C_{28})	10	0.785	1.35
		0.500 (>C_{28})	10	ND	1.15
pH	NA	NA	6.0 to 9.0	7.1	7.4
Total Metals:					
Arsenic	EPA 200.8	0.00100	NA	ND	0.00160
Cadmium	EPA 200.8	0.00100	NA	ND	ND
Chromium	EPA 200.8	0.00100	NA	0.00100	0.00120
Copper	EPA 200.8	0.00200	NA	0.00750	0.0142
Lead	EPA 200.8	0.00100	NA	0.00130	0.00380
Mercury	EPA 245.1	0.000200	NA	ND	ND
Nickel	EPA 200.8	0.00200	NA	ND	0.00210
Zinc	EPA 200.8	0.00500	NA	0.0639	0.0755

Notes:

Chemical analyses by North Creek Analytical, Beaverton, Oregon.
pH measured in field using a Oakton® pHTestr 2 meter and is reported in standard pH units.
NA = Not applicable or not established.
ND = Not detected at the method reporting limit.
NWTPH-Dx analysis conducted without organic cleanup.

TABLE 7

1998-1999 1200T NPDES STORMWATER DISCHARGE PERMIT SCHEDULE B MONITORING REPORT

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 Benchmarks	Fall Sampling Event November 15, 1998	Spring Sampling Event June 7, 1999
General Chemistry:		Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	NA	ND	14.0
Total Phosphorus	EPA 365.3	0.0350	NA	0.208	ND
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	NA	39.4	17.3
Total Organic Carbon (TOC)	EPA 415.1	3.00	NA	ND	10.7
Oil and Grease	NWTPH-Dx	0.250 (C_{10}-C_{28})	10	0.788	0.840
		0.500 (>C_{28})	10	ND	0.547
pH	NA	NA	6.0 to 9.0	7.4	7.4
Total Metals:					
Arsenic	EPA 200.8	0.00100	NA	0.00140	0.00250
Cadmium	EPA 200.8	0.00100	NA	ND	ND
Chromium	EPA 200.8	0.00100	NA	0.00100	ND
Copper	EPA 200.8	0.00200	NA	0.0113	0.00850
Lead	EPA 200.8	0.00100	NA	0.00200	ND
Mercury	EPA 245.1	0.000200	NA	ND	ND
Nickel	EPA 200.8	0.00200	NA	0.00240	0.00250
Zinc	EPA 200.8	0.00500	NA	0.131	0.0279

Notes:

Chemical analyses by North Creek Analytical, Beaverton, Oregon.
pH measured in field using a Oakton® pHTestr 2 meter and is reported in standard pH units.
NA = Not applicable or not established.
ND = Not detected at the method reporting limit.
NWTPH-Dx analysis conducted without organic cleanup.

TABLE 7

1998-1999 1200T NPDES STORMWATER DISCHARGE PERMIT SCHEDULE B MONITORING REPORT

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 Benchmarks	Fall Sampling Event November 15, 1998	Spring Sampling Event June 7, 1999
General Chemistry:		Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	NA	ND	17.0
Total Phosphorus	EPA 365.3	0.0350	NA	0.133	0.176
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	NA	16.3	30.1
Total Organic Carbon (TOC)	EPA 415.1	3.00	NA	ND	12.3
Oil and Grease	NWTPH-Dx	0.250 (C_{10}-C_{28})	10	0.679	1.00
		0.500 (>C_{28})	10	0.722	1.19
pH	NA	NA	6.0 to 9.0	7.1	6.9
Total Metals:					
Arsenic	EPA 200.8	0.00100	NA	ND	0.00120
Cadmium	EPA 200.8	0.00100	NA	ND	ND
Chromium	EPA 200.8	0.00100	NA	0.00110	0.00110
Copper	EPA 200.8	0.00200	NA	0.00900	0.0152
Lead	EPA 200.8	0.00100	NA	0.00290	0.00330
Mercury	EPA 245.1	0.000200	NA	ND	ND
Nickel	EPA 200.8	0.00200	NA	ND	0.00280
Zinc	EPA 200.8	0.00500	NA	0.166	0.116

Notes:

Chemical analyses by North Creek Analytical, Beaverton, Oregon.
pH measured in field using a Oakton® pHTestr 2 meter and is reported in standard pH units.
NA = Not applicable or not established.
ND = Not detected at the method reporting limit.
NWTPH-Dx analysis conducted without organic cleanup.

TABLE 7

1998-1999 1200T NPDES STORMWATER DISCHARGE PERMIT
SCHEDULE B MONITORING REPORT

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 Benchmarks	Fall Sampling Event November 15, 1998	Spring Sampling Event June 7, 1999
General Chemistry:		Concentrations in Milligrams per Liter (mg/L)			
Total Suspended Solids (TSS)	EPA 160.2	10.0	NA	ND	19.0
Total Phosphorus	EPA 365.3	0.0350	NA	0.209	ND
Chemical Oxygen Demand (COD)	EPA 410.4	5.00	NA	26.3	23.4
Total Organic Carbon (TOC)	EPA 415.1	3.00	NA	ND	13.5
Oil and Grease	NWTPH-Dx	0.250 (C_{10}-C_{28})	10	0.422	0.378
		0.500 (>C_{28})	10	ND	ND
pH	NA	NA	6.0 to 9.0	7.2	7.8
Total Metals:					
Arsenic	EPA 200.8	0.00100	NA	0.00180	0.00190
Cadmium	EPA 200.8	0.00100	NA	ND	ND
Chromium	EPA 200.8	0.00100	NA	ND	ND
Copper	EPA 200.8	0.00200	NA	0.00580	0.00560
Lead	EPA 200.8	0.00100	NA	0.00170	0.00100
Mercury	EPA 245.1	0.000200	NA	ND	ND
Nickel	EPA 200.8	0.00200	NA	0.00340	0.00350
Zinc	EPA 200.8	0.00500	NA	0.121	0.0150

Notes:

Chemical analyses by North Creek Analytical, Beaverton, Oregon.
pH measured in field using a Oakton® pHTestr 2 meter and is reported in standard pH units.
NA = Not applicable or not established.
ND = Not detected at the method reporting limit.
NWTPH-Dx analysis conducted without organic cleanup.

TABLE 8

1998-1999 ANNUAL STORMWATER MONITORING DATA SUMMARY REPORT
NPDES PERMIT 1200-Z
CASCADE GENERAL, INC.
PORTLAND, OREGON

ANALYTE	UNITS	EPA METHOD	Sample Point 1		Sample Point 2		Sample Point 3	
			11/10/98	-	11/10/98	-	11/10/98	-
Chemistry								
pH	su	150.1/9040A	7.03	-	5.71	-	6.91	-
Total Suspended Solids	mg/L	160.2	ND10	-	ND10	-	ND10	-
Chemical Oxygen Demand	mg/L	410.4	26.9	-	16	-	19.2	-
Oil & Grease	mg/L	413.1	ND5	-	ND5	-	ND5	-
Total Organic Carbon	mg/L	415.1	4.57	-	4.76	-	4.24	-
Metals								
Arsenic	mg/L	200.8	ND0.001	-	ND0.001	-	0.001	-
Cadmium	mg/L	200.8	ND0.001	-	ND0.001	-	ND0.001	-
Chromium	mg/L	200.8	0.0011	-	ND0.001	-	0.002	-
Copper	mg/L	200.8	0.233	-	0.194	-	0.0962	-
Lead	mg/L	200.8	0.0099	-	0.0014	-	0.0021	-
Nickel	mg/L	200.8	0.0086	-	0.0039	-	0.0221	-
Zinc	mg/L	200.8	1.06	-	1.02	-	0.673	-
Mercury	mg/L	245.1	ND0.0002	-	ND0.0002	-	ND0.0002	-

Notes:
ND: Not detected at indicated reporting limit
mg/L: Milligrams per liter
su: Standard Units

TABLE 9 PORT OF PORTLAND TENANT NPDES PERMIT STATUS

FACILITY	CO-PERMITTEE	COMPANY NAME	PERMIT TYPE
Portland International Airport			
	Yes	Aircraft Service International Group	1200-T
	Yes	Airport Terminal Services	1200-T
	Yes	Alaska Airlines	1200-T
	Yes	ABX Air, Inc.	1200-T
	Yes	American Airlines	1200-T
	Yes	America West Airlines	1200-T
	Yes	Ameriflight	1200-T
	Yes	Budget Rent-A-Car	1200-T
	Yes	Delta Airlines	1200-T
	Yes	Emery Worldwide	1200-T
	Yes	Empire Airlines	1200-T
	Yes	Evergreen Aviation Ground Logistics	1200-T
	Yes	Federal Express Corporation	1200-T
	Yes	Flightcraft	1200-T
	Yes	Hertz Corporation	1200-T
	Yes	Horizon Air Industries, Inc.	1200-T
	Yes	LSG/Sky Chefs	1200-T
	Yes	Northwest Airlines	1200-T
	Yes	Ogden Aviation Services	1200-T
	No, Independent	Oregon Air National Guard	1200-T / 1700
	Yes	PacifiCorp Trans, Inc.	1200-T
	Yes	Portland Fueling Facilities Corp.	1200-T
	Yes	Reno Air (will not exist after 8/30/99)	1200-T
	Yes	Skyflight Services, Inc.	1200-T
	Yes	Sky West	1200-T
	Yes	Southwest Airlines	1200-T
	Yes	Trans World Airlines	1200-T
	Yes	United Airlines	1200-T
	Yes	United Parcel Service, Inc.	1200-T
Marine Terminals			
T-1	No	No Permits	
T-2	No	Stevedoring Services of America, Inc.	1200-Z
T-4	No	Kinder Morgan Bulk Terminals	1200-Z
	No	International Raw Materials	1200-Z
	No	Port of Portland	GEN-15A
T-5	No	Alcatel Submarine Networks, Inc.	GEN-01
		Portland Bulk Terminals	
T-6	No	Port of Portland	1200-Z, GEN-1700,
			1200-CA

FACILITY	CO-PERMITTEE	COMPANY NAME	PERMIT TYPE
Portland Shipyard	Operator	Cascade General	1200-Z
Industrial Tenants		Subtenants	
	Yes	American Bureau of Shipping	1200-Z
	Yes	Columbia Wire & Iron	1200-Z
	Yes	Farr West Marine, Inc.	1200-Z
	Yes	FOSS Environmental	1200-Z
	Yes	Industrial Marine, Inc.	1200-Z
	Yes	International Inspections	1200-Z
	Yes	International Paint	1200-Z
	Yes	John C. Murdoch, Inc.	1200-Z
	Yes	Kleen Blast	1200-Z
	Yes	Lips Propellers, Inc.	1200-Z
	Yes	Marine Propulsion Services	1200-Z
	Yes	Marine Spill Response Corporation	1200-Z
	Yes	Nozl-Tech, Inc.	1200-Z
	Yes	Pacific Dynamics Corporation	1200-Z
	Yes	Steelhead Construction	1200-Z
	Yes	Thermal Services, Inc.	1200-Z
	Yes	Tyco Submarine System, Ltd.	1200-Z
	Yes	U.S. Coast Guard	1200-Z
	Yes	U.S. Filters	1200-Z
	Yes	W & O Supply, Inc.	1200-Z
	Yes	West Coast Marine Cleaning, Inc.	1200-Z
Industrial Parks			
Swan Island	No	Eastern Oregon Fast Freight	1200-T
		Truck Line	
Port Center	No	Freightliner Corporation	1200-Z
Portland Int'l Center	No	Bechtel Infrastructure Corporation	GEN-13
Tanker Basin	No	Chevron USA, Inc.	1200-H
		Tosco Corporation	GEN-05
		McCall Oil and Chemical Corporation	GEN-05

TABLE 10
ENVIRONMENTAL TRAINING CONDUCTED OR ATTENDED IN THE 1998-1999 PERMIT COMPLIANCE YEAR

Training Topic	Initiated by:	Attendees	Date
Storm Water Awareness	Aviation	Landscape, Bldg. Maintenance, Electricians, HVAC, PDX Fire, Airfield Operations, Vehicle Maintenance, Administration, Environmental/Safety	Sept.-Oct. 1998
Deicing Awareness	Aviation	PDX Fire, Maintenance, Airfield Operations	Oct. 1998
Construction Dewatering	Aviation	Construction	Nov. 1998
Erosion Control	Aviation	Construction	Nov. 1998
Spill Response	Aviation	Various PDX Staff	1998/1999
Hazwoper 8 Hour	Aviation	PDX Fire, Maintenance, PDX Environmental/Safety, ESD Staff	1998/1999
ACWA Clean Water Conference	Association of Clean Water Agencies	ESD Staff	July 1998
Storm Water 1999 (storm water management and erosion prevention and control)	Environmental Law Education Center	ESD Staff	July 1998
Integrated Watershed Plan	City of Portland	ESD Staff, Engineering, Properties Staff	Summer 1999
City Storm Water Manual Training	City of Portland	ESD Staff, Engineering, Properties Staff	June 1999
Environmental Sampling and Data Analysis	Government Institute	ESD Staff	Aug. 1998
1999 Oregon Wetlands	Oregon Law Institute	ESD Staff	Mar. 1999
Environmental Enforcement	Environmental Law Education Center	ESD Staff	Dec. 1998

TABLE 11

Storm Water BMP Maintenance Schedule

Basin	Location	BMP	Frequency
1	South of west end of Taxiway C where pipe daylights	Absorbent boom	4 months
2	West Quiesent Pond	Absorbent boom - inlet end	2 months
2	West Quiesent Pond	Absorbent boom - middle section	4 months
2	West Quiesnent Pond	Hard boom - outlet end	1 year
4	Central Quiesent Pond	Absorbent boom - inlet end	2 months
4	Central Quiesent Pond	Absorbent boom - middle section	4 months
4	Central Quiesent Pond	Hard boom - outlet end	1 year
5	Outfall to slough just west of Cornfoot and Airtrans Way intersection	Absorbent boom	2 months
6	East Quiesent Pond	Absorbent boom - inlet end	2 months
6	East Quiesent Pond	Absorbent boom - middle section	4 months
6	East Quiesent Pond	Hard boom - outlet end	1 year
7	Ditch off perimeter road north of PDX Maintenance	Two sets of absorbent boom	2 months
7	Ditch on south side of PDX Maintenance	Absorbent boom	2 months
7	Ditch west of PDX maintenance just east of road into the military base	Absorbent boom	4 months
8	Outfall to slough, west of 92nd	Absorbent boom	4 months
9	Culverts on the south side of the Airport Way and I205 interchange	Absorbent boom	4 months

TABLE 12

Portland International Airport
Oil-Water Separator Cleaning Program

Separator Number	Location	Connection	Month of Cleaning
1	PDX Maintenance - Vehicle Storage Barn	Sanitary	February
2	PDX Maintenance - Wash Rack	Sanitary	April
3	PDX Maintenance - Vehicle Maintenance Bay	Sanitary	June
4	PDX Maintenance - Fuel Island	Storm	August
5	PDX Fire Station	Storm	October
6	PDX Fire Training Facility	Land Application	December

TABLE 13

Dry Season Observation Schedule

Operating Area	Major Outfall	Location	Priority Outfall	1997	1998	1999	2000
Aviation	SS12000	NE 92nd, west of bridge, north side of slough		X			X
Aviation	SS12500	NE 55th & Comfoot, PDX			X		
Aviation	SS12200	NE Alderwood, PDX	X				
Aviation	SS04PP	NE 47th & Comfoot				X	
Aviation	SS6300	Carl St., PDX			X		
Aviation	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 terminal, T-1 S					X
Marine, T-1	WW42PP*	Berth 106, T-1 S		X			
Marine, T-1	WW45PP	Between B.104&105, T-1 S			X		
Marine, T-1	WW47PP	Berth 102, T-1 N				X	
Marine, T-2	BC50PP	N. of Ware. #203, T-2N		X		X	
Marine, T-2	BC54PP	Between B.204&205, T-2S			X		X
Marine, T-4	SJ25PP	T-4, Berth 415	X				
Marine, T-4	SJ23PP	N. of B.415		X			
Marine, T-4	SJ27PP	T-4, Berth 416			X		
Marine, T-4	SJ15PP	Berth 405, under pier				X	
Marine, T-4	SJ19PP	T-4, Berth 411, Pier 2, B.410	X				
Marine, T-4	SJ20PP	T-4 Berth 411, under pier		X			
Marine, T-4	SJ13PP	T-4, B 401			X		
Marine, T-4	SJ26PP	T-4, Berth 416				X	
Marine, T-4	SJ24PP	T-4, Berth 414					X
Marine, T-4	SJ17PP	T-4, S of Berth 405		X			
Marine, T-4	SJ21PP	T-4, Berth 411			X		
Marine, T-4	SJ22PP	T-4, Berth 414 N.				X	
Marine, T-4	SJ18PP	S. of B.405, under pier, T-4					X
Marine, T-4	SJ14PP	Between B.401& 403		X			
Marine, T-4	SJ28PP	Berth 416, South Lot				X	
Marine, T-5	RG11PP	T-5 north end of Columbia Grain					X
Marine, T-5	RG04PP	1st outfall, East end of T-6	X				
Marine, T-5	RG12PP	200 yds. south of RG11PP, T-5 Columbia Grain	X				
Marine, T-5	RG13PP	Port.Bulk Facility, under dock, T-5 300 yds S. of Alcatel property	X				

Marine, T-5	RG12.5PP*	T-5 Alcatel Prop. NW of parking lot		X			
Marine, T-6	RG07PP	First Pier, 300 yards E of T-6			X		
Marine, T-6	RG04PP	1st outfall, East 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 yards 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					X
Properties	RG15PP	30" outfall north of western transportation		X			
Properties	RG16PP	30" outfall south of western transportation		X			
Properties	RG17PP	30" outfall 1/2 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	Terminal 1, North of Ware.#5					X
PSRY	SJ26UN	Between B.79&B.91, berth 304		X			
PSRY	SJ37PP	East of Building #60			X		
PSRY	SJ23UN	PSY, berth 303, B.50				X	
PSRY	SJ41PP	PSY, berth 314, B.134					X
PSRY	SJ30UN	PSY, berth 303, p 38 & 39		X			
PSRY	SJ31UN	Between B.118&B.119, berth 305			X		
PSRY	SJ25UN	B.91, berth 304				X	
PSRY	SJ31.5UN*	B.111					X
PSRY	SJ36PP	East of Building #50		X			
PSRY	SJ42PP	N.Channel & N. Dolphin			X		
PSRY	SJ28UN	B.131&132				X	
PSRY	SJ35PP	PSY, berth 302, B.1	X				
PSRY	SJ39PP	PSY, berth 313	X				
PSRY	SJ33PP	PSY, berth 303, p 33					X
PSRY	SJ34PP	PSY, berth 302/303, B.4		X			
PSRY	SJ29UN	B.130			X		
PSRY	SJ24UN	PSY, berth 304, B.79				X	
PSRY	SJ27UN	PSY, berth 303/304, between B.55 and B.79					X
PSRY	SJ38PP	East of Ballast Water Fac.		X			

Table 14 **1998/1999 DRY SEASON STORM WATER OUTFALL INSPECTION OBSERVATIONS**

OUTFALL	LOCATION	DATE	FLOW	ODOR	STAINING	STRUCTURAL CONDITION	COLOR	CLARITY	FLOATABLES	VEGETATION
BC54PP	T-2 S., between Berth 204 & 205	7/21/98	No	None	None	Normal				None under dock
SJ19PP	T-4, Berth 411, Pier 2, Berth 410	7/21/98	No		None	Normal				Normal
SJ20PP	T-4, Berth 411, under pier	7/21/98	No	None	None	Normal				Normal
SJ21PP	T-4, Berth 411	7/21/98	No	None	None	Pipe split near mouth				Normal
SJ23PP	T-4, N. of Berth 415	7/21/98	No	None	None	Normal				Normal
SJ25PP	T-4, Berth 415	7/21/98	Yes	None	Rust	Normal	Clear	Clear	None	Normal
SJ27PP	T-4, Berth 416	7/21/98	No	None		Normal				Normal
WW48PP	T-1 N., Berth 101	7/21/98	No	None	None	Normal				No vegetation under dock
RG04PP	E. end of T-6, 1st outfall	7/22/98	Yes	None	None	Normal	Clear	Clear	None	Normal
RG05PP	800 yards E. of T-6	7/22/98	No	None	None	Normal				Normal
RG07PP	first pier, 300 yards E. of T-6	7/22/98	No	Rotten meat	None	Normal				Normal
RG12PP	T-5 Columbia Grain	7/22/98	No		Could not be determined	Normal				Normal
RG13PP	T-5, 300 yds. S. of Alcatel property	7/22/98	Yes	None		Normal	Brown	Clear	None	Normal
SS12500	NE 55th & Cornfoot, PDX	8/4/98	No	None	None	Normal	Green with rust colored foam	Clear	None	Excessive growth
SS6300	Carl St., PDX	8/5/98	Yes	None	None	Normal	Brown/green	Clear	Present	Excessive growth
SS12200	NE Alderwood, PDX	8/5/98	Yes	Musty	None	Normal	Brown/green	Slightly turbid	Present	Normal
	South corner of FedEx building #6756	8/5/98	?		None	Normal	Brown	Slightly turbid	None	Inhibited
WW46PP	T-1, Berth 104	8/25/98	No	None	Sediments	Metal corrosion and pipe mouth broken off				None

TABLE 15

1998/1999 DRY SEASON STORM WATER 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 AND GREASE (mg/L)	MBAS (mg/L)	TSS (mg/L)	NITRATE (mg/L)	TOTAL PHENOLS (mg/L)
SJ25PP	7/21/98	6.5	28.5	123.4	2.00	ND	9.83	ND	--	ND	1.98	ND
SS12500	8/4/98	7.1	24.4	2.55	NA	NA	NA	0.595	NA	NA	NA	NA
SS6300	8/5/98	6.9	19.0	372	NA	NA	NA	NA	NA	NA	NA	NA
SS12200	8/5/98	7.0	23.0	290	NA	NA	NA	NA	NA	NA	NA	NA

ND non-detect
NA lab did not performed analysis

s:/proj95/955059ny/AnnlRpt/98-99data/99dy_swo.xls

Appendix 2 Figure List

Figure 1 Swan Island Map

Figure 2 Rivergate Map

Figure 3 Best Management Practices Summary Form

Figure 4 Marine BMP Development Schedule

Figure 5 Filter Maintenance Log

Figure 6 PDX Master Drainage Plan

Figure 7 BMP Inspection and Maintenance Form

Figure 8 BMP Maintenance Schedule Form

Figure 9 Storm Water Use Agreement

Figure 10 Spill Response Procedures

Figure 11 Ordinance Number 361

Figure 12 Erosion Control Incident Report

Figure 13 Construction Dewatering Visual Monitoring Record

Figure 14 Dewatering Specifications

Figure 15 Field Data Form

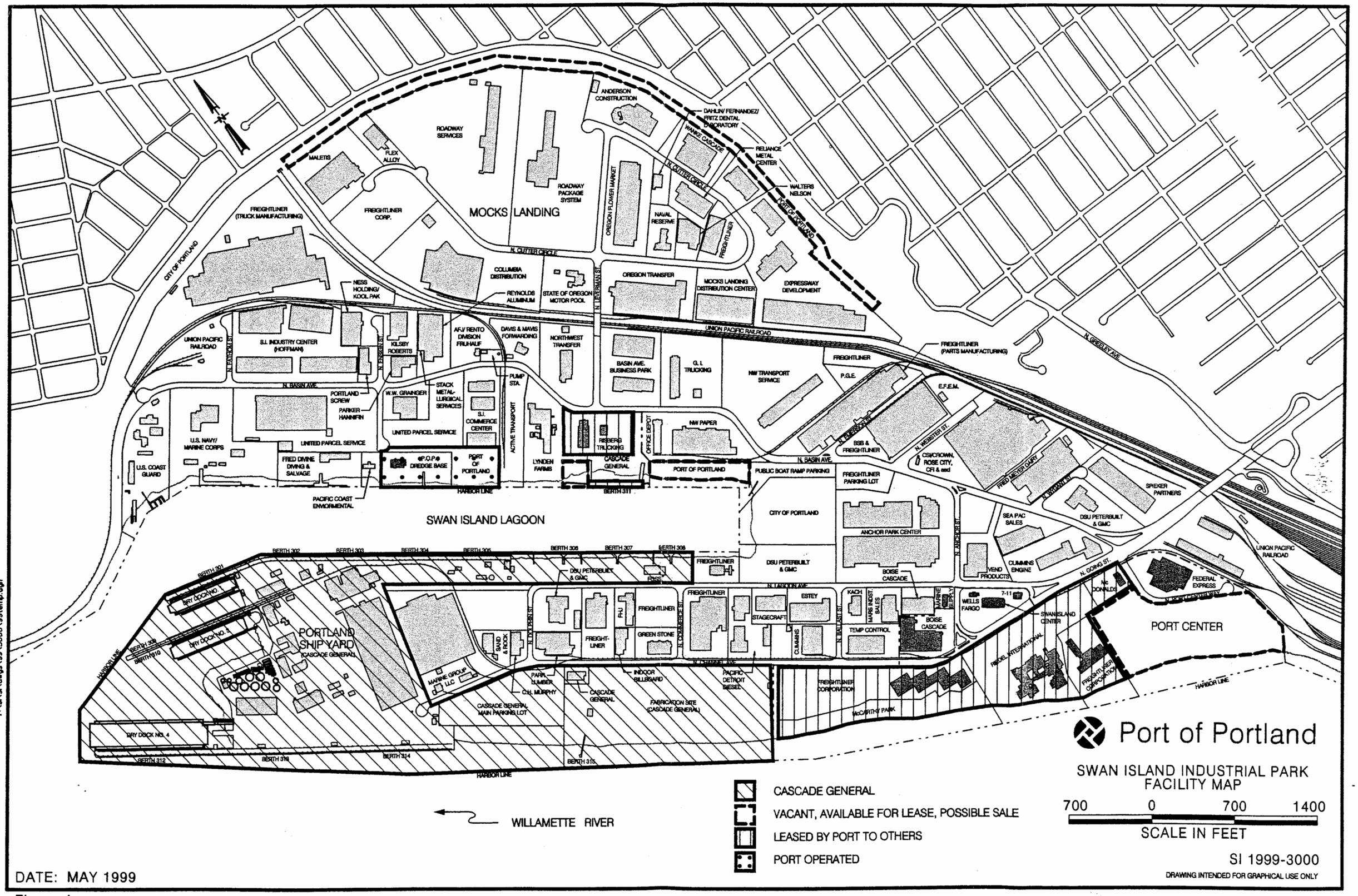

MOCKS LANDING
ROADWAY SERVICES
ROADWAY PACKAGE SYSTEM
FLEX ALLOY
MALETIS
FREIGHTLINER CORP.
FREIGHTLINER (TRUCK MANUFACTURING)
CITY OF PORTLAND
ANDERSON CONSTRUCTION
DAHLIN/ FERNANDEZ/ FRITZ DENTAL LABORATORY
WANKE CASCADE
RELIANCE METAL CENTER
WALTERS NELSON
PORT OF PORTLAND
N. CUTTER CIRCLE
OREGON FLOWER MARKET
NAVAL RESERVE
FREIGHTLINER
COLUMBIA DISTRIBUTION
STATE OF OREGON MOTOR POOL
N. LEVERMAN ST.
OREGON TRANSFER
MOCKS LANDING DISTRIBUTION CENTER
EXPRESSWAY DEVELOPMENT
NIESS HOLDING/ KOOL PAK
REYNOLDS ALUMINUM
UNION PACIFIC RAILROAD
UNION PACIFIC RAILROAD
S.I. INDUSTRY CENTER (HOFFMAN)
N. PATTON ST.
N. ERSKINE ST.
KILSBY ROBERTS
AFJ RENTO DIVISION FRUHAUF
DAVIS & MAVIS FORWARDING
NORTHWEST TRANSFER
BASIN AVE. BUSINESS PARK
G. I. TRUCKING
NW TRANSPORT SERVICE
FREIGHTLINER
P.G.E.
FREIGHTLINER (PARTS MANUFACTURING)
N. GREELEY AVE.
N. BASIN AVE.
PORTLAND SCREW
PARKER HANNIFIN
W.W. GRAINGER
STACK METAL-LURGICAL SERVICES
PUMP STA.
S.I. COMMERCE CENTER
ACTIVE TRANSPORT
LYNDEN FARMS
RISBERG TRUCKING
OFFICE DEPOT
NW PAPER
E.F.E.M.
N. ELEVATOR AVE.
BSB & FREIGHTLINER
N. WEBSTER ST.
CSI/CROWN, ROSE CITY, CFI & sed
FRED MEYER DEPT.
N. WRIGHT ST.
SPIEKER PARTNERS
U.S. NAVY/ MARINE CORPS
UNITED PARCEL SERVICE
UNITED PARCEL SERVICE
U.S. COAST GUARD
FRED DIVINE DIVING & SALVAGE
P.O.P. DREDGE BASE
PORT OF PORTLAND
CASCADE GENERAL
PORT OF PORTLAND
N. BASIN AVE.
PUBLIC BOAT RAMP PARKING
FREIGHTLINER PARKING LOT
HARBOR LINE
BERTH 311
PACIFIC COAST ENVIORMENTAL
SWAN ISLAND LAGOON
CITY OF PORTLAND
ANCHOR PARK CENTER
N. ANCHOR ST.
SEA PAC SALES
DSU PETERBUILT & GMC
CUMMINS ENGINE
VEND PRODUCTS
N. GOING ST.
UNION PACIFIC RAILROAD
BERTH 302
BERTH 303
BERTH 304
BERTH 305
BERTH 306
BERTH 307
BERTH 308
BERTH 301
DSU PETERBUILT & GMC
FREIGHTLINER
DSU PETERBUILT & GMC
N. LAGOON AVE.
BOISE CASCADE
WELLS FARGO
7-11
McDONALDS
FEDERAL EXPRESS
N. HOWARD WAY
DRY DOCK NO. 1
DRY DOCK NO. 2
DRY DOCK NO. 4
PORTLAND SHIP YARD (CASCADE GENERAL)
BERTH 309
BERTH 310
HARBOR LINE
BERTH 312
BERTH 313
BERTH 314
BERTH 315
HARBOR LINE
N. DOCKMAN ST.
FREIGHT-LINER
FHJ
FREIGHTLINER
GREEN STONE
SAND & ROCK
N. CHANNEL AVE.
FREIGHTLINER
STAGECRAFT
ESTEY
CUMMINS
KACH
MARS INDST. SALES
N. BALLAST ST.
TEMP CONTROL
BOISE CASCADE
MARINE SUPPLY
SWAN ISLAND CENTER
PORT CENTER
MARINE GROUP LLC
PARK LUMBER
C.H. MURPHY
CASCADE GENERAL MAIN PARKING LOT
CASCADE GENERAL
INDOOR BILLBOARD
FABRICATION SITE (CASCADE GENERAL)
PACIFIC DETROIT DIESEL
FREIGHTLINER CORPORATION
McCARTHY PARK
RIDDEL INTERNATIONAL
FREIGHTLINER CORPORATION
HARBOR LINE
WILLAMETTE RIVER
CASCADE GENERAL
VACANT, AVAILABLE FOR LEASE, POSSIBLE SALE
LEASED BY PORT TO OTHERS
PORT OPERATED
Port of Portland
SWAN ISLAND INDUSTRIAL PARK
FACILITY MAP
700 0 700 1400
SCALE IN FEET
SI 1999-3000
DRAWING INTENDED FOR GRAPHICAL USE ONLY
DATE: MAY 1999
r:\si\si\dwgs\99\3000\99temp.dgn
04-AUG-1999 15:40
TRUONT

Figure 1

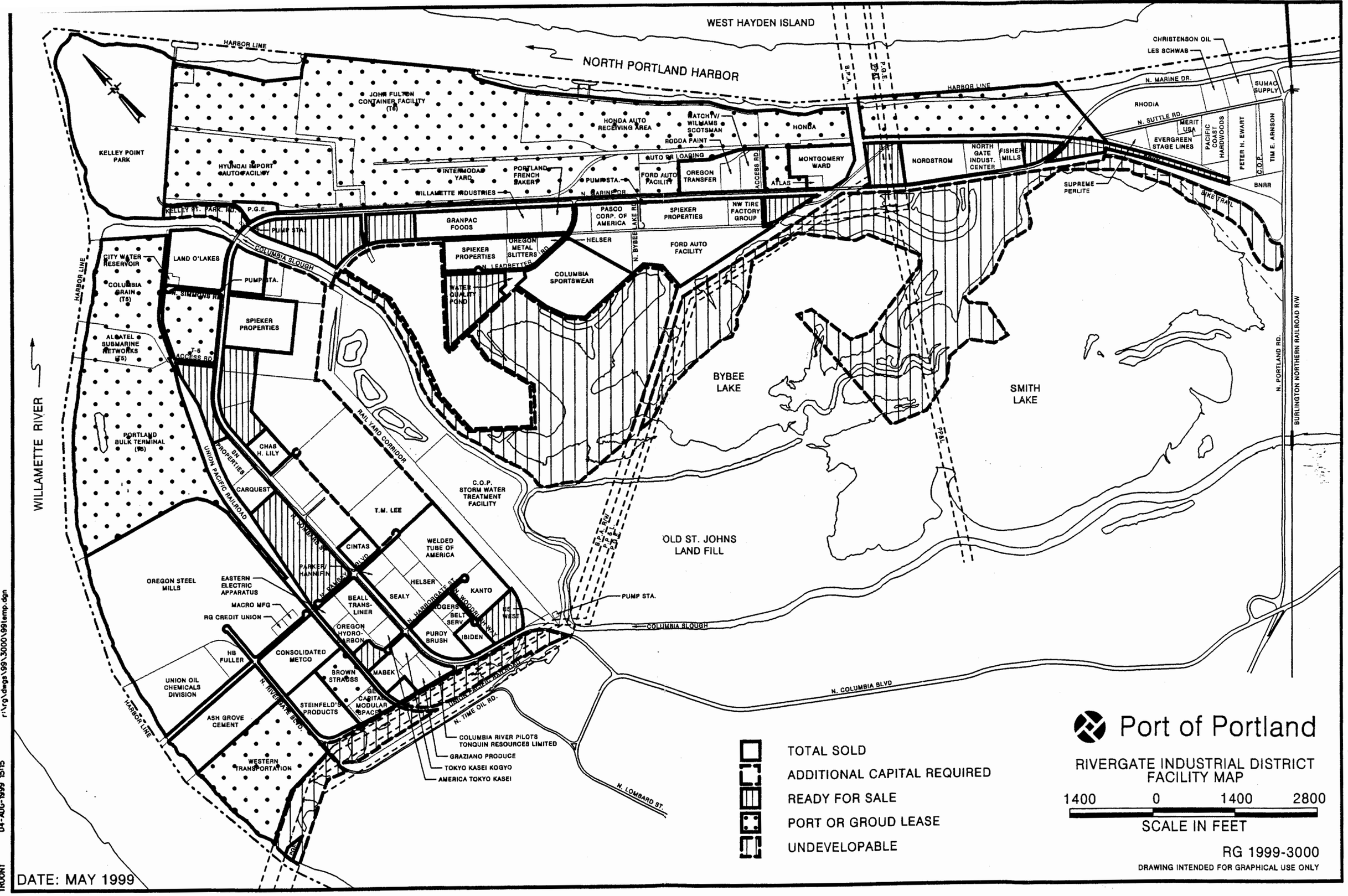


Figure 2

TRUONT 04-AUG-1999 15:15 r:\rg\dwgs\99\3000\991emp.dgn

FIGURE 3

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 4

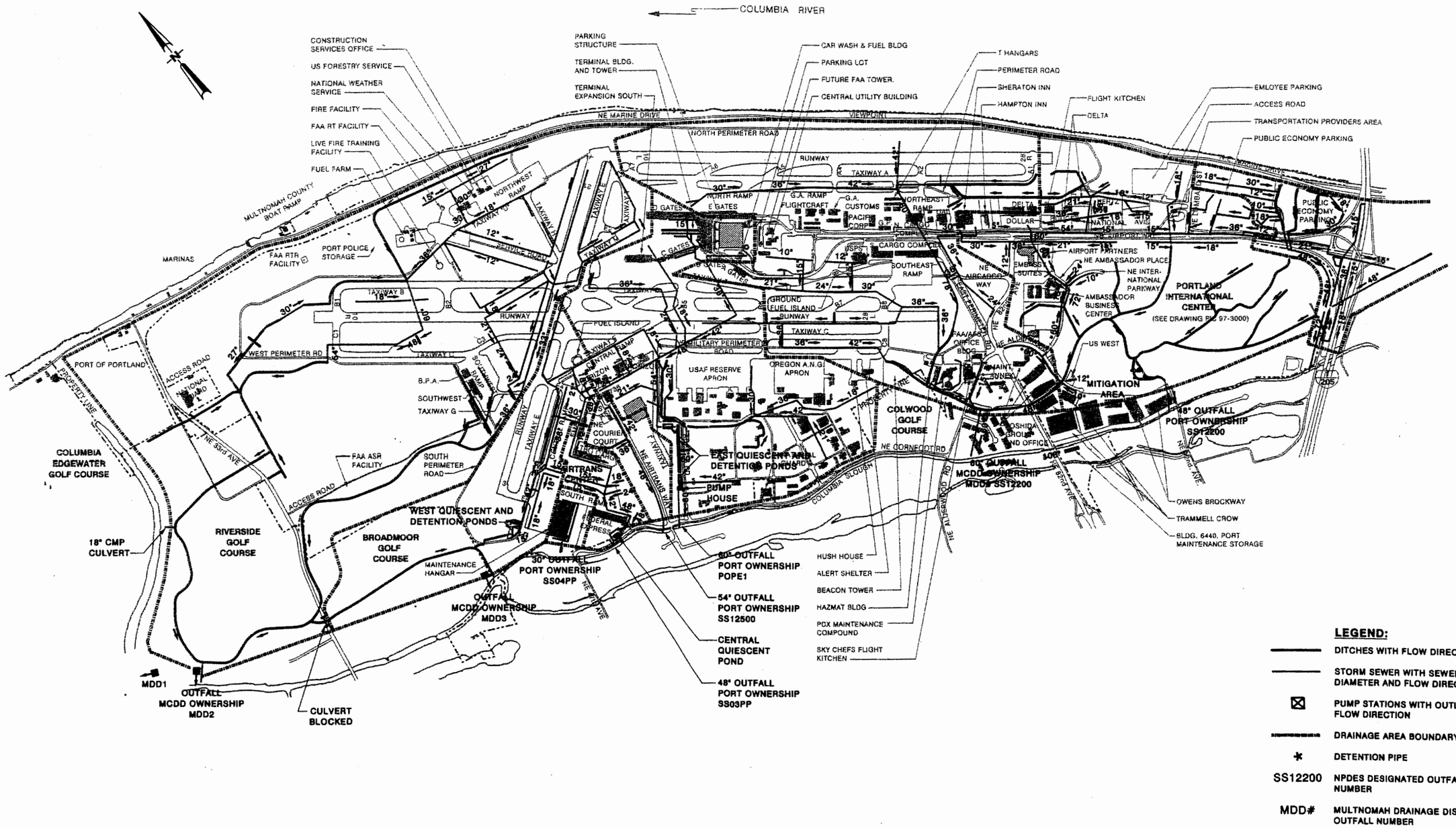
Marine BMP Development Schedule

11:00 to 1:00 at Marine Facility Maintenance

BMP	Present BMP Topic	Review Draft BMP	Finalize BMP
• Storm Water Management/Water Quality	04/01/99	04/29/99	05/27/99
• Spill Response	04/29/99	05/27/99	06/24/99
• Emergency Response Procedures	6/24/99	7/22/99	08/19/99
• Environmental Reporting and Record Keeping	7/22/99	08/19/99	09/16/99
• Waste Management	08/19/99	09/16/99	10/14/99
• Hazardous Waste/Hazardous Materials Management	09/16/99	10/14/99	11/11/99
• Facility/Equipment Maintenance & Washing	10/14/99	11/11/99	01/13/2000
• Facility Development/Construction	11/11/99	01/13/2000	02/10/2000
• Air Quality	01/13/2000	02/10/2000	03/09/2000
• UST/AST/Mobile Tanks/Fueling Operations	02/10/2000	03/09/2000	04/13/2000
• Vessel Maintenance and Painting	03/09/2000	04/13/2000	05/11/2000
• Wetlands	04/13/2000	05/11/2000	06/08/2000
• Asbestos	05/11/2000	06/08/2000	07/13/2000
• Other	06/08/2000	07/13/2000	

FIGURE 5 **Filter Maintenance Log**

Filter Location (identify which filter - where it is in the yard)	**Date Filter Inspected**	**Date Filter Changed**	**Comments**



NO.	DATE	BY	REVISIONS	CK'D	APP'D	NO.	DATE	BY	REVISIONS	CK'D	APP'D

PORT OF PORTLAND
PORTLAND, OREGON

DRAWING NUMBER
51918
PROJECT NUMBER

DESIGNED BY: S. LASZLO
DRAWN BY: M. DETTMER
CHECKED BY: D. IRVINE
DATE: OCT 1998
SCALE: 1" = 1000'

PORTLAND INTERNATIONAL AIRPORT

MASTER DRAINAGE PLAN

SUBMITTED BY: DAVID J. IRVINE
PROJECT ENGINEER

DRAWING NO. PDX 98-3009 5/5 (C-5)

FIGURE 6

FIGURE 7

BMP INSPECTION AND MAINTENANCE FORM

FUEL ISLAND AND USTS

NAME:	DATE:
TITLE:	TIME:

VISUAL OBSERVATIONS:
RAINFALL: (YES/NO)
pH MEASUREMENT:
ANY UNUSUAL OBSERVANCES: (COLOR/FOAM/ODOR) IF YES, ACTION TAKEN:
LEAKS: (YES/NO)
LOCATION(S):
ACTIONS TAKEN:
SAMPLES/MEASUREMENTS TAKEN:
INDIVIDUAL WHO PERFORMED ANALYSIS:
ANALYSIS PERFORMED:
RESULTS OF ANALYSIS:
ADDITIONAL COMMENTS:

FIGURE 8

Port MSWMP 40 CFR 122.26(d)(2)(iv)(A)(1) Maintenance

BMP Maintenance Schedule Form

Form completed by: _____ Date: _____

Port Operating Area where BMP is implemented: _____

_____

Port personnel or Port contractor responsible for BMP maintenance: _____

_____

What is the frequency of maintenance or the schedule for maintaining the BMP: _____

_____

_____

_____

_____

_____

Where / how are the maintenance records maintained: _____

_____

Where / how is the BMP maintenance procedure documented in the operating area:

_____

_____

Other relevant BMP maintenance information: _____

_____

_____

_____

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"{ XE "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"{ XE "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"{ XE "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"{ XE "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

Port of Portland

SPILL RESPONSE PROCEDURES FOR EQUIPMENT OPERATORS @ TERMINAL 6, PORTLAND

This protocol is issued as an element of the Terminal 6 Spill Response Plan to outline steps to be taken when an oil spill occurs from a toploader, semi-tractor or forklift on the terminal; for example, a ruptured hydraulic hose on a toploader.

1. Stop and park the vehicle is a safe, paved location away from storm drains.

2. Report all spills immediately to the Gearlocker, Supervision and Port Security; Give:

   - Vehicle type and number
   - Specific location
   - Nature of spill
   - Your name

3. Do not continue to operate the vehicle or drive it across the terminal. (To do so would spread the spill)

4. Do not park the vehicle in a gravel or sand area, unless it cannot be moved onto pavement.

5. If on a toploader: remove the storm drain cover from the kit on the toploader and place it over the storm drain closest to the spill.

6. Standby for further instruction from supervision.

2/97

FIGURE 11

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 "Pollutant" 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.

SECTION 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: _____
Assistant Secretary

By: _____
President

APPROVED AS TO LEGAL SUFFICIENCY

_____
Counsel for the Port of Portland

APPROVED BY COMMISSION

3-11-92
(date)

FIGURE 12

EROSION CONTROL INCIDENT RECORD
For Internal Use Only

Inspectors Name: _____ Date: _____

Drainage Basin Project Located In: _____

Name Of Project: _____

Port / Tenant Project Contact: _____

Contact Phone Number: _____

Erosion Control / Water Quality Issue: _____

_____

_____

_____

_____

Corrective Action: _____

_____

_____

Immediate Follow-up Action Required: _____

_____

_____

Follow-up Schedule: _____

_____

Record Distribution: _____

_____

FIGURE 13

Construction Dewatering

Visual Monitoring Record

Internal Use Only

Date Time	Water Quality Observations	Odor Present?	Oily Sheen	Estimated quantity of discharge reaching the storm system	Action Taken	Initials
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			
		yes / no	yes / no			

FIGURE 14

SECTION 02140
DEWATERING

A note refers to the article or paragraph which immediately follows. Notes referring to more than one article or paragraph will be explicitly worded to that effect.

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes dewatering required for trenching, excavation, and construction of underground utilities.

B. Sand and silt soils that are expected to be encountered in this area are sensitive to groundwater seepage and pore pressures.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02200, Earthwork

B. Section 02221, Trenching, Backfilling, and Compacting

1.3 REFERENCED STANDARDS

A. ASTM: American Society for Testing and Materials.

1.4 SUBMITTALS

A. At least 2 weeks prior to beginning construction work, submit to the Engineer for review a statement of method, details, installation, and operation of the proposed dewatering system for trenching, excavating, and construction work. The plan shall demonstrate the control of groundwater to improve stability of the walls and bottom of the excavations for a period of time sufficient for the placement of pipe and structure foundations as shown on the drawings.

B. Determine and demonstrate the dewatering methods necessary to achieve the groundwater conditions specified herein. The range of dewatering options is not intended to exclude the use of open pumping with sumps and ditches, subject to the open pumping conditions specified herein.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Select A for PDX or PIC. Select B for RG, HI, or SI. Seclect C for GA airports.

3.1 DEWATERING REQUIREMENTS

A. The Contractor may select from the following options:

1. Option 1, Land Disposal:

a. Discharge water from dewatering operations to the ground surface for eventual infiltration or evaporation. Water shall be contained in a natural or created basin or swale approved by the Engineer. If satisfactory containment cannot be achieved, utilize Option 2.

b. Perform daily inspections of the effluent to determine its cleanliness. Evidence of contamination includes oil sheen on the water surface, discoloration of soil or water, odor of solvents or fuel, or any knowledge of pollutants. Notify the Engineer immediately if evidence of soil or water contamination is encountered. When contamination is suspected, the Port will obtain effluent samples for testing.

2. Option 2, Sorm Sewer System Disposal:

a. Discharge water into the storm sewer system which eventually feeds into the Columbia Slough. Provide a discharge sampling site located where water leaves the construction area. Notify the Engineer at least 24 hours before the sampling site is ready. Assist the Port in obtaining effluent samples at least 48 hours prior to the beginning of dewatering activities. Do not begin dewatering operations until notified by the Engineer.

b. The Port will test samples for turbidity, total suspended solids (TSS), volatile organic campounds (VOCs), total petroleum hydrocarbons (TPH), chemical oxygen demand (COD), benzene, ehylbenzene, toluene, and xylenes (BETX). If no significant pollutants are found, the Contrator may discharge into the storm sewer system without restriction. The Port will perform monthly sampling at the outfall while dewatering discharge is occurring.

c. After initial testing, perform daily inspections of the effluent to determine its cleanliness. Evidence of contamination includes oil sheen on the water surface, discoloration of soil or water, odor of solvents or fuel, or any knowledge of pollutants. Notify the Engineer immediately if evidence of soil or water contamination is encountered. When contamination is suspected, the Port will obtain effluent samples for testing.

Reminder: Choose B for RG, HI, or SI.

B. The Contractor may select from the following options:

1. Option 1, Land Disposal:

a. Discharge water from dewatering operations to the ground surface for eventual infiltration or evaporation. Water shall be contained in a natural or created basin or swale approved by the Engineer. If satisfactory containment cannot be achieved, utilize Option 2 or Option 3 based on the duration of dewatering operations.

b. Perform daily inspections of the effluent to determine its cleanliness. Evidence of contamination includes oil sheen on the water surface, discoloration of soil or water, odor of solvents or fuel, or any knowledge of pollutants. Stop work and notify the Engineer immediately if evidence of soil or water contamination is encountered. When contamination is suspected, the Port will obtain effluent samples for testing.

2. Option 2, Storm Sewer System Disposal (Less Than Two Weeks):

a. Discharge water from dewatering operations to the storm sewer system as long as the effluent looks clean. Perform daily inspections of the effluent to determine its cleanliness. Evidence of contamination includes oil sheen on the water surface, discoloration of soil or water, odor of solvents or fuel, or any knowledge of pollutants. Stop work and notify the Engineer immediately if evidence of soil or water contamination is encountered. When contamination is suspected, the Port will obtain effluent samples for testing.

3. Option 3, Storm Sewer System Disposal (Greater Than Two Weeks):

a. Discharge water from dewatering operations into the storm sewer system. Provide a discharge sampling site located where water leaves the construction area. Notify the Engineer at least 24 hours before the sampling site is ready. Assist the Port in obtaining effluent samples at least 48 hours prior to the beginning of dewatering activities. Do not begin dewatering operations until notified by the Engineer.

b. After initial testing, perform daily inspections of the effluent to determine its cleanliness. Evidence of contamination includes oil sheen on the water surface, discoloration of soil or water, odor of solvents or fuel, or any knowledge of pollutants. Stop work and notify the Engineer immediately if evidence of soil or water contamination is encountered. When contamination is suspected, the Port will obtain effluent samples for testing.

Reminder: Choose C for GA airports.

C. The Contractor may select from the following options:

1. Option 1, Land Disposal:

a. Discharge water from dewatering operations to the ground surface for eventual infiltration or evaporation. Water shall be contained in a natural or created basin or swale approved by the Engineer. If satisfactory containment cannot be achieved, utilize Option 2.

b. Perform daily inspections of the effluent to determine its cleanliness. Evidence of contamination includes oil sheen on the water surface, discoloration of soil or water, odor of solvents or fuel, or any knowledge of pollutants. Stop work and notify the Engineer immediately if evidence of soil or water contamination is encountered. When contamination is suspected, the Port will obtain effluent samples for testing.

2. Option 2, Storm Sewer System Disposal:

a. Discharge water from dewatering operations to the storm sewer system as long as the effluent looks clean. Perform daily inspections of the effluent to determine its cleanliness. Evidence of contamination includes oil sheen on the water surface, discoloration of soil or water, odor of solvents or fuel, or any knowledge of pollutants. Stop work and notify the Engineer immediately if evidence of soil or water contamination is encountered. When contamination is suspected, the Port will obtain effluent samples for testing.

3.2 POLLUTION CONTROL

A. If pollutants are found in any sample above allowable levels, the Contractor shall work in coordination with the Engineer and with the Port Environmental Services Division (ESD) to develop a treatment plan to treat effluent prior to discharge. Submit the treatment plan for Port review and approval. The treatment plan must satisfy Port permit requirements for pollutants identified in the testing. Treatment methods may include settling tank, settling pond, or filtration system. Continue to perform daily inspections of the effluent to determine its cleanliness. Stop work and notify the Engineer immediately if evidence of soil or water contamination is encountered.

3.3 DEWATERING OPERATIONS

A. Control ground water in a manner that will preserve the strength of the bottom soils of trenches and excavations, will not cause instability of the excavation slopes, and will not result in damage to existing structures.

B. Lower the ground water level before beginning excavation or using wells, wellpoints, or similar methods. Maintain the drawdown water level at least 12 inches below the bottom of the trench.

C. Open pumping with sumps and ditches will not be permitted if it results in boils, loss of fines, softening of the ground, or instability of slopes.

D. The Contractor is responsible for dewatering, including the adequacy of the dewatering system. Keep trenches and excavations free of water and provide adequate pumping and piping equipment to handle and dispose of water.

E. Provide adequate screens or plugs to prevent objectionable material from entering the downstream storm sewer system. Provide adequate screens or filters so that continuous pumping of fines does not occur.

F. Excavation and filling of sumps and ditches in the trench or excavation bottoms for dewatering purposes shall be considered incidental to the work and shall be done at no added cost to the Port.

G. Maintain drawdown water level until the trench is backfilled to the original ground water level.

END OF SECTION

FIGURE 15

40 CFR 122.26(d)(2)(iii) Monitoring Program

Field Data Form

BMP Effectiveness Monitoring

Sampling Location: _____

Sampler Name: _____ Date: _____

Storm Event Information

Days / hours since last runoff occurred: _____

Days since last sample was collected: < 60 > 60

Estimated time rain began: _____

Estimated time storm water discharge began: _____

Estimated time rain ended: _____

Total rain gauge amount: _____
(If storm is over 24hrs long - record the 24 hour rainfall amount)

Sample Analysis Information

Time samples collected: _____

pH of flow: _____

Depth of flow in pipe: _____

Area Condition Information

Visual observations of area: _____

_____

Attach copy of relevant maintenance records: _____

Estimate last time area was swept: _____

Have any spills occurred in the area in the last 3 months? _____
(if yes attach spill incident information)

Comments: _____

_____

_____

Section V

OREGON DEPARTMENT OF TRANSPORTATION (ODOT)

National Pollutant Discharge Elimination System (NPDES)

Annual Report

August 1999

Oregon Department of Transportation

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DEQ Letter

ACRONYMS

ACWA	Association of Clean Water Agencies
APWA	American Public Works Association
BMP	Best Management Practices
CCO	Clackamas County
CFR	Code of Federal Regulations
CFS	Compost Filter Systems
COG	City of Gresham
COP	City of Portland
COS	City of Salem
DMV	Department of Motor Vehicles
IGA	Intergovernmental Agreement
IVM	Integrated Vegetation Management
MS4	Municipal Separated Storm Sewer System
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
O&M/OM	Operations and Maintenance
OSU	Oregon State University
OTC	Oregon Transportation Commission
P2O	Pollution Prevention Outreach
SWMP	Stormwater Management Plan
TAC	Technical Advisory Committee
TMOC	Traffic Management Operations Center
USA	Unified Sewerage Agency
USFWS	U. S. Fish and Wildlife Service
USGS	U. S. Geological Survey

FOREWORD

As stated in federal regulations, 40 CFR 122.42(c), all National Pollutant Discharge Elimination System (NPDES) stormwater discharge permits require an annual report summarizing the status of the permittee's stormwater management plan (SWMP).

This document meets the 1999 annual report requirements for the six required Municipal Separated Storm Sewer System (MS4) NPDES permits that are currently held by the Oregon Department of Transportation (ODOT). As all six of the permits are implementing the same ODOT NPDES stormwater management program, ODOT is submitting one report that summarizes the status of all six permit programs. The six permit programs summarized in this report are:

- **Portland NPDES Permit- #101314**
  - Lead Agency: City of Portland
  - Co-permitees: Oregon Dept. of Transportation
    Port of Portland
    Multnomah County
    Peninsula Drainage Districts 1 & 2

- **United Sewerage Agency NPDES Permit- #101309**
  - Lead Agency: United Sewerage Agency
  - Co-permitees: Oregon Dept. of Transportation
    Washington County

- **City of Gresham NPDES Permit- #101315**
  - Lead Agency: City of Gresham
  - Co-permitees: Oregon Dept. of Transportation
    City of Fairview
    Multnomah County

- **Clackamas County NPDES Permit- #108016**
  - Lead Agency: Clackamas County
  - Co-permitees: Oregon Dept. of Transportation Oak Lodge Sanitary District
  - And the Cities of: Gladstone, Happy Valley, Johnson City, Lake Oswego, Milwaukie, Oregon City, River Grove, West Linn, Wilsonville

- **City of Eugene NPDES Permit- # 101244**
  - Lead Agency: City of Eugene
  - Co-permitees: Oregon Dept. of Transportation

- **City of Salem NPDES Permit- # 108919**
  - Lead Agency: City of Salem
  - Co-permitees: Oregon Dept. of Transportation

INTRODUCTION

The Clean Water Act of 1972 identified the need to return "bodies of water" of the U.S. to beneficial uses: swimming, fishing, habitat, etc. In 1987 Congress passed amendments to the Clean Water Act, initiating the National Pollutant Discharge Elimination System (NPDES) Nonpoint Source Permit program.

The NPDES program requires the Oregon Department of Transportation (ODOT) to participate in a municipal separated storm sewer system (MS4) permit process. This process requires ODOT to obtain an NPDES permit for all ODOT public stormwater sewer systems that are located within Oregon's urban areas (municipalities with a population greater than 100,000).

Complying with the MS4 permits and implementing the required Best Management Practices (BMPs) involves every region, section, and unit within ODOT.

An annual report is a requirement of the National Pollutant Discharge Elimination System (MS4) permit. This document will serve to meet the reporting requirements of the permit issued to the City of Portland, the Unified Sewerage Agency, Clackamas County, the City of Gresham, City of Eugene, City of Salem and ODOT. This report provides an overview of ODOT's NPDES program accomplishments from August 1, 1998- August 1, 1999.

This is the final year this reporting format will be used, as the existing MS4 permits expires September 30, 1999. ODOT has continued to work with DEQ to develop an ODOT-specific statewide NPDES permit. The new permit will meet the current MS4 and Clean Water Act requirements, as well as incorporate ODOT statewide efforts to comply with the Endangered Species Act. As part of permit renewal, ODOT will evaluate the annual reporting needs, structure, and tasks of the current program and propose necessary changes to the existing reporting and monitoring requirements. In the new permit, ODOT will establish a reporting date that coincides with the reporting date of the Oregon Plan for Salmon and Watersheds to improve agency efficiency.

REPORT STRUCTURE

This report includes a summary of goals and accomplishments for specific permit areas, and includes monitoring accomplishments, budget expenditures, and proposed program modifications.

Technical documentation that is available includes monitoring results and other detailed technical and administrative information. ODOT will supply this information to interested parties upon request.

PROGRAM STRUCTURE

The NPDES unit acts as a technical resource to ODOT staff, liaison to the public, city, county, and state agencies and helps insure implementation of BMPs in accordance with the NPDES permit. An ODOT/DEQ Steering team develops policies to guide the agency in implementing the NPDES program.

ODOT maintenance and construction staff are responsible for performing the tasks of the appropriate and applicable BMPs. ODOT implements the NPDES program statewide to align with the commitments and program goals of the Oregon Plan for Salmon and Watersheds and the ODOT Integrated Vegetation Management Program.

BACKGROUND

In order to meet NPDES permit requirements in the Portland-Metro, Eugene, and Salem areas, ODOT worked with co-permittees to develop a stormwater-monitoring plan (SWMP). The plan addresses pollutant reduction and considers impacts of pollutants associated with ODOT facilities on receiving waters.

Eight program categories were identified and defined in order to meet federal requirements of the NPDES program, as outlined in the Code of Federal Regulations (40 CFR.) The following eight categories reflect areas of ODOT's participation:

1) Operations and Maintenance
2) Public Education and Involvement
3) Illicit Discharge Controls
4) New Development Standards
5) Structural Controls
6) Planning, System Preservation, and Development
7) Inventory of Storm Drain System
8) Monitoring

BMPs were identified within these categories to reduce pollutant loadings to the maximum extent practical in stormwater runoff from ODOT facilities. Inventory and Monitoring are requirements of the permit but have no attached BMPs. See page 18 for detailed information on Inventory and Appendix B for detailed monitoring information.

REPORT CONTENT

This report is directed to the Oregon Department of Environmental Quality (DEQ), the regulatory agency issuing and overseeing the implementation of ODOT's NPDES permits.

Organization of this report reflects ODOT's stormwater management plan and BMPs as written in the Portland-Metro, Eugene, and Salem NPDES permit applications. Identical program categories and/or BMPs may vary in name or reference number among the six NPDES

permits. Identical BMPs are listed and cross referenced according to permit lead agencies in Appendix A. Lead agencies for each permit are abbreviated as follows:

COP = City of Portland
USA = United Sewerage Agency
CCO = Clackamas County
COG = City of Gresham
COE = City of Eugene
COS = City of Salem

Program goals and attached BMPs are stated, and, where appropriate, followed by a description of accomplishments, obstacles to implementation, and proposed changes to the program. Other required permit information is included in tables at the end of this report.

Also included in this report are ODOT accomplishments not directly required by the MS4 permits, but related to the statewide Oregon Plan for Salmon and Watersheds and Integrated Vegetation Management programs.

Detailed information related to this report, including documentation of field investigations, mapping results, monitoring data, administrative documentation and other technical information is available upon request:

Contact: Oregon Department of Transportation
Salmon Recovery Program Manager
Office of Maintenance
800 Airport Rd SE
Salem, OR 97301-4798
(503) 986-3008

LEVEL OF EFFORT

Operations and Maintenance (O&M)
The goal in meeting the O&M requirements is to evaluate and modify, as appropriate, current practices to reduce impact from highway maintenance activities on receiving waters, and adopt new policies and procedures that reduce the amounts of pollutants discharged to the storm sewer system.

OM 1 & OM 2

DESCRIPTION
Develop an Operation and Maintenance (O&M) plan for public stormwater quality structural controls.
Evaluate existing stormwater maintenance practices that effect stormwater quality.

ACCOMPLISHMENTS
Task 1 - Inventory and map existing storm facilities.

- Dry weather inspection of major outfalls within current ODOT MS4 permit areas.
- Added new "as-constructed" plans to inventory as requested.
- Continued work on an ODOT Features Inventory project. Project includes compiling an inventory of all cross pipes on highways. Initiated Region 3 and Region 4 inventory.
- Completed statewide inventory of ODOT culverts in cooperation with ODFW. Culverts were evaluated for fish passage issues.

Task 2 - Review and describe current O&M practices, evaluate in terms of stormwater quality and identify pollutants of concern.

- Assessed ODOT programs as they relate to stormwater management and incorporated goals of similar practices into the NPDES stormwater program. Negotiated with DEQ to integrate NPDES stormwater management goals into the ODOT Oregon Plan for Salmon and Watersheds.
- Renegotiated "ODOT Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices" with NMFS. Document revised to meet Endangered Species Act concerns.
- Developed statewide bridge washing guidelines in cooperation with ODFW.
- Worked with ODFW, NMFS, Division of State Lands, and Army Corp. of Engineers to clarify ditch maintenance permit requirements.
- Developed erosion control guidelines for ditch maintenance.
- Initiated work on developing guidelines for armoring stream banks. The goal is to minimize exposed armor and increase vegetative cover.
- Continued 1997 research project to investigate environmental effects of the de-icer Calcium Magnesium Acetate (CMA) on surfacewater. Research includes sample collection, data analyses, and report preparation. Preliminary data presented in Table 2.3 (Appendix B).

- Continued Winter Maintenance Technical Advisory Committee to discuss winter maintenance chemicals and impacts on surfacewaters.
- Initiated investigation of environmental effects of the de-icer magnesium chloride. Researched existing information on magnesium chloride, tested deicer for metals, and began identification of sites for field research.
- Continued assessment of stormwater containment and detention facilities. Assessment includes sample collection and determination of retrofit needs (Appendix B).
- Completed an inventory in Region 1 and 2, which evaluated aggregate sources, as well as the quarry proximity to water bodies, and potential for stormwater runoff to leave the site.
- Continued work on the ODOT "resource mapping" project. Project includes identifying and locating natural resources or environmentally sensitive areas along ODOT highways. Areas of special maintenance activities can then be identified along ODOT roads by highway milepoint (no spray zones, endangered species, etc.). ODOT completed a set of resource inventory maintenance maps for Region 3 this year and has started the resource inventory for Region 2.

Task 3 – Develop a pilot study to evaluate current waste disposal practices, identify treatment and disposal options, determine accumulation rates, and compare water quality improvements from different treatment practices.

- Continued pilot project on flocculent testing to determine its effectiveness in removing suspended solid pollutants from liquid vactor waste and for its ability in accelerating the de-watering of vactor waste solids.
- Began pilot project to research field decanting methods for vactor waste. Crews experimented with adding flocculent to vactor trucks and then decanting in the field. Liquid and solid samples were collected and analyzed (Appendix B).
- Partnered with the City of Portland to test a filter box. Both the City and ODOT will run tests on the filter box using different types of filters.
- Began compost pilot project. Constructed sample boxes filled with various mixtures of road sweepings and compost material to determine pollutant breakdown and concentration in runoff. Compost will be monitored for runoff and total pollutant levels. Preliminary testing completed.
- Continued research on the constructed berm pilot project. Berm is constructed of sweepings and landslide fill. Samples collected to investigate composting of the sweeping material (Appendix B).
- Constructed a mobile settling pond for containment and de-watering of vactor waste. The pond water and sediment will be tested in conjunction with the use of flocculent.

OM 3

DESCRIPTION

Review current certification procedures/requirements for high volume users of pesticides, herbicides and fertilizers to assure water quality impacts are addressed. As appropriate, make recommendations for changing the requirements.

ACCOMPLISHMENTS

- Continued District level Integrated Vegetation Management (IVM) Coordinator positions.
- Continued work on the development of a herbicide and pesticide chemical tracking database. When completed, the database will be accessible to all ODOT maintenance yards and will track chemicals purchased, used, and stored by each maintenance unit.
- Continued Herbicide Research Project investigating the effects of ODOT's use of herbicides on waterways. Work, done in cooperation with the USGS, includes sample collection to determine herbicide transport.
- Revised vegetation spray agreement with ODA to improve herbicide and pesticide chemical tracking.
- Investigated innovative techniques for vegetation management, such as grazing goats on ODOT right of way, using heat treatment to control vegetation, etc.

OM 4

DESCRIPTION

Review existing truck hauling practices and make recommendations, if necessary, to limit the occurrence of leaks, spills, or other releases.

ACCOMPLISHMENTS

- Completed review of truck hauling practices during permit year 1995-96.

Public Education and Involvement
The NPDES permit requires a comprehensive public education and involvement program with the goal of increasing public awareness on pollutants in stormwater runoff. Due to state constitutional limitations on expenditure of gas tax dollars, ODOT's education efforts are primarily directed to ODOT staff.

ED 1

DESCRIPTION
Develop a comprehensive stormwater/watershed education program.

ACCOMPLISHMENTS AND OBSTACLES TO IMPLEMENTATION
- Hosted five training classes statewide (including Portland, Salem, Eugene) on fish passage, culverts, and salmon issues. Class included information related to reducing channel scour and sedimentation and improving water quality as it relates to culverts. Audience comprised of local government personnel, agency staff, and consultants.
- Hosted four training classes statewide on surface erosion control and distributed "Erosion & Sediment Control" manual.
- Hosted two training classes on in-water work and distributed "Instream Sediment Control Techniques Field Implementation Manual". Classes included information related to reducing sedimentation to streams caused by construction projects.
- Hosted five training classes on statewide requirements of the Clean Water Act. Classes included information on the requirements and responsibility of individual ODOT units.
- Distributed to Districts, informational video: "Calcium Magnesium Acetate: A Valuable Tool for Winter Maintenance." The video answers questions on the appropriate use and effects of calcium magnesium acetate as a winter maintenance anti-icer.
- Continued Winter Maintenance Technical Advisory Committee to discuss winter maintenance chemicals and impacts to water quality.
- Presented information at the Washington Weed Association Annual Conference on critical areas of concern for salmon habitat and water quality, and how integrated vegetation management can incorporate those concerns.
- Hosted the Horticulture Symposium and the Oregon Vegetation Annual Meeting.
- Sponsored two Integrated Vegetation Management Conferences and participated in a short course on Waste Management.
- Presented the video "Road to Recovery: Transportation Related Activities and the Impacts on Salmon" and discussed water quality issues at the Washington Roads and Streets Supervisor's Conference, APWA Conference, Street Supervisors Conference, Marion County Public Works Conference, and the Oregon County Street Supervisors Conference.
- Distributed "Culvert Fish Passage Improvement: How to Retrofit/Remediate Existing Culverts" manual at culvert remediation training.
- Participated in the Stop Oregon Litter and Vandalism (SOLV) programs to clear beaches of litter each spring and fall.
- Supported SOLV's programs aimed at environmental education, community involvement, and statewide cleanup and restoration projects.
- Conducted voluntary NPDES erosion control assessment of construction projects.

Task 1 - ODOT NPDES unit will request that the Department of Motor Vehicles (DMV) include a brochure with each motor vehicle registration describing impacts to stormwater quality resulting from improper disposal of automobile fluids.

- Reprinted and distributed brochure.

Task 2 - ODOT will make available to staff any brochure on "housekeeping practices" developed by other jurisdictions.

- Reviewed "Stormwater Management Manual " by the City of Portland.
- ODOT tracked public education activities by local jurisdictions and directs interested parties to appropriate publications.

PI 1

DESCRIPTION

Develop a comprehensive stormwater/watershed public participation plan. Participate in watershed planning groups statewide.

ACCOMPLISHMENTS AND OBSTACLES TO IMPLEMENTATION

- Participated as appropriate with watershed councils and as a member of the technical teams for the Lower Columbia River Task Force and the Willamette River Initiative.
- Participated with other state agencies on the Implementation Team for the Oregon Plan for Salmon and Watersheds.
- Participated as a member of technical teams with watershed councils to develop TMDL guidelines as it relates to transportation authorities.
- Partnered with Jackson County Parks and Road Services to develop an innovative approach for vegetation management on public right-of-way. Received the final report "Integrated Roadside Vegetation Management" identifying standards and strategies for regionally consistent vegetation management.
- Partnered with BLM, Malheur County, and the Malheur/Owyhee Watershed Council to develop and implement a project that will remove unwanted vegetation, re-seed, and restore 270 miles of road shoulder and backslopes.
- Worked with city, county, and tribal entities as appropriate to plan and implement restoration and mitigation efforts.

Task 1 – List the Traffic Management Operations Center (TMOC) telephone number on all signs posted at illegal dumpsites.

- The ODOT Traffic Management Operations Centers in each Region are up and running at this time. The telephone numbers are being advertised.

Illicit Discharge Controls
The goal of the category is to develop and implement a program to detect, investigate, and eliminate illicit discharges to the ODOT storm sewer system.

ILL 1

DESCRIPTION
Manage a spill prevention and response program that reduces the frequency and impacts of spills to the stormwater system.

ACCOMPLISHMENTS AND OBSTACLES TO IMPLEMENTATION
Task 1 - Evaluate existing spill response program for water quality with recommendations.

- Continued to develop and implement Regional Incident Response Teams.
- Continued to participate on the Regional (Portland) Spill Response Technical Advisory Committee (TAC).
- Continued assessment of hazardous material spill-containment facilities.
- Continued to work with local fire departments, DEQ, private contractors, and local spill response teams to coordinate response and remediation of spills.

ILL 2

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

ACCOMPLISHMENTS
- Researched seven illicit discharge investigations, three of those have been resolved.
- Continued to negotiate an agreement with DEQ to define agency roles and develop an illicit discharge response proposal. The response proposal outlines a consistent statewide method for researching and documenting illicit discharges at the District level.
- Performed 19 ODOT construction site assessments and made recommendations for improvements to sites as needed.

Task 1 - Enter into an intergovernmental agreement with lead agencies to conduct illicit discharge investigations.

- As a result of agency direction for a statewide NPDES permit, this task has been eliminated. Illicit discharge investigations will be handled as part of the statewide illicit discharge response protocol being negotiated with DEQ.

New Development Standards
The goal of this category is to develop and define standard practices for new construction to insure compliance with the permit by reducing storm water pollutant loadings and controlling erosion.

ND 2

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

ACCOMPLISHMENTS
Task 1 - Implement and adopt recommended procedures for adequately identifying areas of erosion concern early in the project development and construction process.

- Convened a Technical Advisory Committee to develop protocol and policies in developing permanent stormwater facilities.
- Continued random and requested erosion control assessments for ODOT construction jobs. Increased direct communications between erosion control designers and construction field staff.
- Partnered with the U.S. Forest Service to experiment with the effectiveness of a soil lock chemical in reducing erosion on steep banks. Soil lock was used in conjunction with seeding on a half-acre area to enhance bank stability.
- Conducted four surface and erosion control training classes and two in-water work training classes for ODOT project managers and inspectors.
- Installed additional sediment traps along state highways.
- Evaluated and established erosion control measures at dumpsites.
- Continued to work with ODF on identifying and locating known and potential hazardous landslide areas along ODOT right-of-way.
- Continued development of ODOT's statewide "resource mapping" project that identifies and locates natural resources or environmental sensitive areas along ODOT highways. Maps identify areas of special concern (unstable land, wetlands, parks, etc.) and may be useful to ODOT Project Development Teams. Completed Region 3 maps that locate natural resource areas of concern. Began resource inventory for Region 2.
- ODOT coordinated with ODFW, USFWS, and NMFS on impacts and mitigation on construction projects related to water quality and aquatic habitat.

Task 2 - Develop a statewide erosion control handbook.

- Hired a consultant and completely revised the ODOT Erosion Control Manual.
- Presented four 2-day training classes based on the revised Erosion Control Manual.
- Began work preparing a field handbook on Erosion Control (estimated completion date 10/99).
- Continued participation with Washington State Department of Transportation to develop streambank restoration guidelines.

Task 3* - Standardized designs and contract plans.

- Continued work on a new draft of Seeding and Erosion Control ODOT/APWA Specifications.
- Revised all Erosion Control details and drawings.
- Developed new temporary sediment trap design procedure based on climate zones in Oregon.

Note: * Designates task completed in permit 1996-1997. Work listed is "in addition".

ND 3

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

ACCOMPLISHMENTS
- Completed this task in permit year 1996-1997. ODOT now uses the NEPA project review process to address water quality issues.

ND 4

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

ACCOMPLISHMENTS
Task 1 - Identify the most appropriate and effective way to educate personnel on pollutants associated with construction sites and the impacts to water quality.

- Continued inspection program to perform random and voluntary inspections on ODOT construction projects.
- Hosted four surface erosion control training classes and two in-water work training classes statewide. Classes included information related to reducing sedimentation to streams caused by construction projects.
- Distributed information to ODOT staff on the latest technology in pollution and erosion control.
- Distributed updated ODFW guidelines for in-water work to statewide maintenance and construction forces.
- Attended pre-construction conferences to educate contractors of NPDES requirements for projects with sensitive receiving water issues.

ND 6

DESCRIPTION
Establish incentives and/or requirements for contractors/developers to insure that damages from erosion and/or sediment deposition are addressed and paid for.

ACCOMPLISHMENTS
Task 1 - Review existing conditions and make recommendations for improvements.

- Completed in permit year 1996-1997. ODOT now includes the cost of erosion control and sediment deposition damage in contract bid documents.

Structural Controls
The goal of this category is to insure stormwater treatment standards are current, and facilities are effective in pollutant removal.

STR 1 & STR 2

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

ACCOMPLISHMENTS
- Met with the ODOT Facilities Unit to discuss and clarify elements of the Clean Water Act as it relates to ODOT facilities.
- Continued the formal partnership with DEQ to develop a new NPDES permit program for ODOT.
- Formed ODOT/DEQ MS4 steering committee to identify appropriate stormwater treatment and mitigation for ODOT projects statewide (including stormwater treatment goals and priorities).
- Formed ODOT/DEQ stormwater-facility technical team to address technical issues associated with ODOT stormwater facilities and to assist with the development of ODOT's new water quality permit.
- Continued assessment of storm water containment and detention facilities. Assessment includes sample collection and determination of retrofit needs.
- Outlined need for operation and maintenance plans for detention facilities.

Task 1 - Review each project prospectus for possible water quality treatment and/or facility needs.

- Continued reviewing project prospectus on a project-by-project basis for appropriate stormwater treatment.

STR 3

DESCRIPTION
Support government and community tree planting programs.

ACCOMPLISHMENTS
Task 1 - Examine and evaluate existing tree planting policies and programs, including the America Treeways Initiative.

- Prepared Draft of "Integrated Roadside Vegetation Management" which, in part, addresses tree planting policies and programs.
- Worked with partners to plant trees. Planted 1500 trees along ODOT right-of-way.

STR 4

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

ACCOMPLISHMENTS
Task 1 - Increase awareness of water quality issues, methods available, and opportunities for treatment through training and orientations.

- Attended and participated in watershed planning groups statewide.
- Distributed ODFW guidelines for timing of in-water work to statewide maintenance and construction forces.
- Evaluated highway culvert impacts to fish passage. Produced handbook of culvert retrofit and remediation methods that address fish passage.
- Held training sessions throughout ODOT on water quality issues. (See ED1 – page 8)
- Initiated Stream Team Technical Advisory Committee and Leadership Team to work on developing agency policy and design standards for bank stabilization.

STR 5

DESCRIPTION
Encourage public and private groups to research new, more economical methods of improving storm water quality. Adopt methods as appropriate and document and distribute information from research efforts.

ACCOMPLISHMENTS
- Continued research project investigating stormwater transport of herbicides and their environmental effects. This is a joint project with USGS and the Federal Highway Administration.
- Researched existing literature and collected samples for a research project on the environmental effects of the de-icer, Calcium Magnesium Acetate (CMA). This project has been a joint project with USGS and the Federal Highway Administration.
- Continued 1999 Winter Maintenance Technical Advisory committee to review new literature and research on the environmental effects winter maintenance chemicals.
- Distributed research findings to interested state and local public works agencies.

Task 1 - Identify and evaluate the effectiveness of alternative water quality treatment options.

- Continued research project investigating roadwaste disposal options that will minimize negative impacts to water quality. Project includes researching flocculent, field decant station, waste disposal box, compost, constructed berm, and the mobile settling pond pilot projects.
- Partnered with the U.S. Forest Service and ODFW to identify sites and construct sediment traps along highways to reduce stream sedimentation.
- Presented a design course in conjunction with ODFW and OSU on culvert design for restoring salmon passage.
- Developed partnership with ODFW and OSU to monitor retrofitted culverts for fish passage.
- Assessed spill containment and stormwater detention facilities. Assessment includes facility evaluation, determination of retrofit needs, and sample collection.

Planning System Preservation and Development
The goal is to insure that planning efforts encompass long term solutions to reduce pollutant loadings and to include stormwater management in project development.

PS 1

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

ACCOMPLISHMENTS
Task 1 - Develop an Integrated Vegetation Management program as defined by OAR 634.122.1

- Continued to define specific vegetation management issues to each ODOT district through ODOT Integrated Vegetation Management (IVM) program.
- Reviewed and updated IVM training programs (on-going).
- Continued Herbicide Research Project that will investigate the effects of ODOT's use of herbicides on waterways. Work included sample collection to determine herbicide transport. (A report from USGS is expected.)
- Partnered with Jackson County Parks and Road Services to develop an innovative approach for vegetation management on public right-of-way. Received the final report "Integrated Roadside Vegetation Management" identifying standards and strategies for regionally consistent vegetation management.
- Investigated innovative techniques for vegetation management, such as grazing goats on ODOT right of way, using heat treatment to control vegetation, etc.

PS 3

DESCRIPTION
Inventory and map stormwater systems.

ACCOMPLISHMENTS
- Produced "resource maps" for Region 3 that inventory environmental resource concerns by mile point within ODOT highway right-of-way. Began resource inventory for Region 2 maps.
- Researched drainage systems on an as-needed, as-requested basis.
- Continued work on developing Features Inventory to provide a one-stop drainage information system (on going).

PROPOSED CHANGES TO PROGRAM - PERMIT YEAR 1998-1999

- ODOT proposes to apply for an ODOT-specific MS4 NPDES Permit.

ODOT continues to work with DEQ to develop an ODOT-specific statewide NPDES permit. The new permit will meet the current MS4 and Clean Water Act requirements, as well as incorporate ODOT statewide efforts to comply with the Endangered Species Act. As part of permit renewal, ODOT will evaluate the annual reporting needs, structure, and tasks of the current program and propose necessary changes to the existing reporting and monitoring requirements. In the new permit, ODOT will establish a reporting date that coincides with the reporting date of the Oregon Plan for Salmon and Watersheds to improve agency efficiency. Formal response from DEQ regarding the statewide ODOT-specific NPDES permit was received November 16, 1998. The letter is attached (Appendix E).

- ODOT proposes to eliminate ILL2 task 1: Enter into an intergovernmental agreement with lead agencies to conduct illicit discharge investigations.

As a result of agency direction, ODOT proposes this task be eliminated. Future illicit discharge investigations will be handled as part of the statewide illicit discharge investigation protocol being negotiated with DEQ.

1997 - 1998 CHANGES

PROPOSED: Apply for an ODOT-specific MS4 NPDES Permit (1997 request).

CHANGE: ODOT is working with DEQ to develop an ODOT specific NPDES permit. This permit will incorporate requirements of ODOT's current MS4 permits as well as future Phase II NPDES requirements. The new permit will meet the renewal requirements and replace ODOT's existing MS4 permits.

PROPOSED: Submit specific monitoring plans and projects to DEQ as they are developed.

CHANGE: ODOT has developed a new NPDES monitoring program that incorporates water quality monitoring into specific research projects. There are currently four ODOT research projects in various stages of development that have a water quality-monitoring component attached to them. It is ODOT's plan to submit to DEQ more complete monitoring plans and data as these research projects develop. Data collected thus far for these projects is included in this report (see Appendix B).

1996 - 1997 CHANGES

PROPOSED: Move City of Eugene annual report due date to September.

CHANGE: ODOT now submits one September Annual Report for all ODOT MS4 permits.

PROPOSED: ODOT will submit a new monitoring program to DEQ for approval during Permit Year three.

CHANGE: ODOT identified and submitted seven potential ODOT Monitoring Projects to DEQ during the 1997 permit year. Four of these monitoring projects were selected for implementation by ODOT. These projects are all being implemented as independent projects on separate timelines. For this reason, a single ODOT NPDES monitoring plan was not developed or submitted.

1995 - 1996 CHANGES

OM 1 & OM 2 (Task 3) – Develop a pilot study to evaluate ODOT's current sweeping practices.

CHANGE: ODOT's original sweeping pilot study was replaced with a more comprehensive roadwaste research project. This is a long-term roadwaste research project investigating and evaluating treatment and disposal options for street sweepings and vactor waste. Potential impacts to water quality that result from the management of these wastes are being investigated as part of this study.

OM 4 (Task 1) – Review and re-evaluate current exemptions to state truck hauling statutes.

CHANGE: Based on the outcome of conversations with local exempted industries, ODOT does not believe an ODOT proposal for legislative change to truck hauling practices is appropriate. ODOT will not be implementing this task.

ED 1 (Task 1) – ODOT NPDES unit will request the Department of Motor Vehicles (DMV) include with each motor vehicle registration, a flyer, describing impacts to stormwater quality from improper disposal of automobile fluids.

CHANGE: DMV was unable to distribute flyers as requested. Flyers have been distributed to ODOT and DMV personnel through the State mail system, and to the public through ODOT and DMV information kiosks. The flyers have also been distributed to other MS4 permit holders through the Regional Coalition for Clean Rivers and Streams.

PI 1 (Task 1) – List the Traffic Management Operations Center (TMOC) number on all signs posted at illegal dumpsites.

CHANGE: ODOT replaced the PI1 task of posting the TMOC number at dumpsites with a more extensive outreach plan. The TMOC number has been highly publicized on radio, TV, and through newspaper advertising. ODOT response units have the number posted and are on the road and available 24 hours a day. Signs with the TMOC telephone number are posted on major ODOT highways throughout the Portland-Metro area.

Inventory

The NPDES permit requires an inventory of ODOT's storm drain system that lists major outfalls over 36 inches in size within NPDES permit boundaries. ODOT owns 20 such outfalls in the Portland, Clackamas County, Unified Sewerage Agency and Gresham permit areas, one in the Eugene permit area, and one in the Salem permit area. ODOT outfalls have been located, inspected, and are being compiled in an agency database.

- Continued to research and update records on outfalls located within ODOT's NPDES MS4 permit boundaries. Specific minor drainages were researched as information was requested.
- Developed an outfall inventory work plan for NPDES MS4 Phase II requirements.
- Started field-checking outfalls for a Phase II NPDES MS4 Permit Application.
- Initiated incorporating latitudinal and longitudinal coordinates into outfall inventory.
- Field checked and verified ODOT's "major" outfall located within the Salem MS4 Permit area.
- Started to identify other ODOT needs that could be met in statewide outfall inventory efforts.
- Continued work on Features inventory project, inventorying major culverts to comply with a new state utility law (one-call locating). Cross culverts have been identified and marked in Region 2.
- Continued a culvert inventory project in cooperation with Oregon Department of Fish & Wildlife to identify and prioritize barriers to fish passage.
- Created an inventory format for documenting major urban outfalls statewide.
- Started to incorporate inventory efforts into the work of other ODOT units (Mapping, Maintenance, and Geo-Hydro).

Monitoring

The NPDES permit requires an on going monitoring program. This program is intended to characterize stormwater within the permitted system, detect pollutants, and assess the effectiveness of control measures and/or BMPs that are employed to reduce these pollutants.

- Continued to implement research projects to assess BMPs or gather further data related to pollutant characterization studies.
- Continued with streetwaste research project monitoring. Monitoring work includes sample collection from pilot projects; flocculent, field decant station, filter box, compost, constructed berm, and the mobile settling pond projects. Final report expected by spring 2000.
- Partnered with consultants to research retrofit options for waste management disposal units in ODOT facilities.
- Continued the monitoring program for Herbicide Research Project. Work included sample collection to determine herbicide transport. (A report from USGS expected in beginning of year 2000.)

- Began development of a monitoring program for the chemical deicer: magnesium chloride. Work includes researching existing data available and potential sample site identification.
- Continued development of a monitoring program for the chemical deicer: Calcium Magnesium Acetate (CMA). Work included researching existing data available and collection of samples at an appropriate site (formal USGS report expected by October 1999).
- Participated as appropriate on the Oregon Plan for Salmon and Watersheds monitoring team.
- ODOT's original MS4 NPDES Permit monitoring plan was completed. Results previously submitted to DEQ in the report: "ODOT Stormwater Quality Data Report (May 1996)".

Budget

The ODOT NPDES unit program expenditures for the ODOT fiscal budget year (July 1997-July 1999) was $505,476.00. This figure represents only money spent directly by the NPDES unit and does not reflect other ODOT money spent to support water quality work. Many ODOT Clean Water efforts are incorporated into day to day budgets and are not currently being tracked.

An additional ODOT program focusing on water quality as part of its work is the Integrated Vegetation Management special projects. The expenditures for these projects are listed below (again for ODOT fiscal year July 1997-July 1999).

NPDES	$ 505,476.00
Integrated Vegetation Management (special projects)	$ 42,121.00
Total	$ 547,597.00

As part of ODOT's commitment to the Oregon Plan for Salmon and Watersheds, ODOT's Clean Water Program also received a betterment budget of $1,000,000 for the biennium (July 1997-July 1999). This was in addition to general program administrative costs listed above. Betterment money was spent specifically on ODOT projects aimed at improving salmon habitat and watershed health including fish passage improvement, seeding, stream bank stabilization, and other projects related to erosion control (Appendix C).

Program Goals and Future Activities

- Initiate an ODOT specific statewide NPDES permit that addresses requirements of the Clean Water Act.
- Develop further monitoring and research plans to evaluate the effectiveness of specific water quality BMPs.
- Continue work within ODOT and with other appropriate agencies to develop further training and informational sharing programs (erosion control, maintenance, etc.).
- Continue to develop appropriate IGAs with appropriate agencies.
- Continue to develop watershed partnerships and projects that will improve water quality with other appropriate agencies.

Summary

This report documents the principal programs and activities that ODOT has implemented during the 1998-1999 permit year in order to meet the NPDES requirements of ODOT's six MS4 permits. This report is submitted to DEQ as a requirement of those permits. ODOT intends to continue its effort to improve the quality of the State's highway stormwater. ODOT will also continue its support of the Oregon Plan for Salmon and Watersheds, which is closely aligned with ODOT's Clean Water (NPDES) program.

APPENDIX A

Table 1.1 – ODOT Maintenance Activities

Table summarizes ODOT District maintenance activities that directly impact NPDES water quality BMPs.

Table 1.2 – Dry Weather Field Inspections

Table summarizes annual field inspection of the ODOT major stormwater outfalls that are located within ODOT's MS4 permit areas.

Table 1.3 – ODOT Interagency BMP Cross Reference Chart

Table summarizes related BMP codes for all 6 of ODOT's MS4 NPDES Permits.

Table 1.1
ODOT Maintenance Activities 1998-1999

ODOT ACTIVITY NUMBERS	ACTIVITY DESCRIPTION	MEASUREMENT	DISTRICT TOTALS FOR DISTRICTS IN PERMIT AREA				
			2A	2B	2C	4	5
117	Pick up sweeping	Lane kilometers swept	1785	1714	511	168	548
119	Shoulder maintenance	Work hours	1152	152	344	0	3744
120	Ditch cleaning and shaping	Ditch kilometers cleaned and shaped	82	15	90	222	34
121	Culvert and inlet cleaning	Installations cleaned	5415	3553	735	2050	933
122	Erosion repair	Work Hours	176	0	960	3016	530
123	Culvert and inlet repair	Work Hours	1376	224	992	1864	800
129	Drainage maintenance	Work Hours	832	174	512	1376	200
134	Litter pick up	Shoulder kilometers	1064	1640	1120	1463	1152
135	Youth Litter Patrol and Adopt a Highway	Shoulder kilometers	2968	3416	2840	2970	3256
181	Slide removal	Work Hours	2944	720	1440	2856	1728

Districts 2A, 2B, and 2C include the Portland Metro are (COP, COG, USA, and CCO – MS4 permit areas)
District 4 includes the City of Salem (COS – MS4 permit area)
District 5 includes the City of Eugene (COE – MS4 permit area)

District work cannot be broken out by MS4 permit area

Table 1.2
Dry Weather Field Screening (1998-99)

Permit	Outfall ID	Hwy #	ODOT #	Rec. Water	Location	Size	Date	Pics	Results	Action
COP	WW0101	I-5	1	Willamette Rvr.	S. of Marquam Bridge	42"	8/99	yes	clean	none
COP	EW 1300	I-5 & I-405	1, 61	Willamette Rvr.	I-405/I-5 Interchange	48"	7/99	yes	clean	none
COP	WW0200	I-405	61	Willamette Rvr.	I-405 @ Fremont Br.	42"	7/99	yes	clean-pipe submerged	none
COP	(not listed)	43	3	Willamette Rvr.	Macadam @ Bancroft	42"	7/99	yes	clean-algae growth	none
COP	SS24040	I-205	64	Col. Slough	I-205/Airport Way	48"	8/99	yes	clean	none
COP	SS26020	I-205	64	Col. Slough	I-205/Airport Way	36"	7/99	yes	clean-maintenance needed-veg.	future
COP	SS27010	I-205	64	Col. Slough	I-205 @ 105th	36"	7/99	yes	clean	none
COP	SS9000	I-205	64	Col. Slough	I-205/NE Holman Glass Plant Rd.	60"	7/99	yes	clean	none
COP	CB01005	I-205	64	Col. Slough	I-5 @ Columbia Blvd.	42"	7/99	yes	clean	none
COP	SS23050	I-205	64	Col. River	E. of I-205 on Marine Dr.	9'x5'	7/99	yes	clean	none
COP	EW58UN	I-84 & I-5	1, 2	Willamette Rvr.	I-84/I-5 Interchange	36"	7/99	yes	clean	none
COP	EW1200	I-84	2	Willamette Rvr.	I-84 E. Burnside	42"	7/99	yes	clean	none
COP	JC02J2	213	68	Johnson Creek	SE 82nd/Harney	38"	7/99	yes	clean	none
COP	JC05J5	213	68	Johnson Creek	SE 82nd/Harney	24"	7/99	yes	clean	none
COP	SS12100	213	68	Col. Slough	NE 82nd/Holman (by Holiday Inn)	36"	7/99	yes	clean	none
USA	O-104761	I-5	1	Tualatin	I-5 @ Tualatin Bridge	36"	7/99	yes	clean-maintenance needed	future
USA	OD4	99W	1W	Chicken Creek	99W @ Scholls Sherwood Rd.	36"	7/99	yes	clean	none
COG	G18	26	26	Johnson Creek	Hwy. 26 @ Powell Loop	36"	8/99	yes	clean-maintenance needed-veg.	future
CCO		I-205	64	Willamette Rvr.	I-205 @ Clackamas/Oregon City	24"	7/99	yes	clean	none
CCO		I-205	64	Abernathy Crk.	I-205 @ Hwy. 213 South	48"	7/99	yes	clean	none
CCO					I-205 @ 99E (W. side of Bridge)	48"	7/99	yes	clean	none
CCO					I-205 @ 99E (E. side of Bridge)	36"	7/99	yes	clean	none
COE		I-105	227	Willamette Rvr.	Hwy 105 @ Willamette Rvr.(S)	42"	7/99	yes	clean	none
COS	ODOT-I-5-256	I-5	1	Eastgate Basin	I-5 @Sunnyview Rd.	72"	7/99	yes	clean-maitnenance needed-veg.	future

Table 1.3
BMP Cross Reference Chart

Agency	*BMP Code*															
ODOT, City of Portland, & Clackamas County	OM1, OM2	OM3	OM4	ED1	PI1	ILL1	ILL2	ND2	ND3	ND4	ND6	STR1, STR2	STR3	STR4	STR5	PS3
Unified Sewerage Agency	2g, 13a, 13f, 14a	1b, 1e	4d	*	2b,2d	4a	2i,3e	8a	13f	8a	*	12c,13a	*	13f	*	*
City of Gresham	RC 2, RC 4/7, RC 9, RC 11	RC 8/15, RC 13, RC16/17	*	*	*	*	*	RC1, RC 4/7	*	*	*	RC 4/7, RC 12	*	RC 12	RC 16/17	*
City of Eugene	OM1, OM2,	OM2	OM4	ED1	*	OM10	MON2	P&A4	*	P&A7	P&A4	*	ED3	*	*	OM2
City of Salem	RC1, RC4, RC5, RC6, RC12, RC16	RC8, RC9	ILL1	RC10	*	ILL1	ILL2	CON1	CON3		*	RC1	*	RC1	*	RC12

Notes:

**Program BMP is being implemented, but there is no corresponding BMP codes for other jurisdictions*

Explanation of ODOT BMP codes:

Operations and maintenance

OM1: Develop plan for stormwater quality structural controls
OM2: Evaluate existing stormwater maintenance practices
OM3: WQ impacts due to herbicides, pesticides, and fertilizers
OM4: Truck hauling practices; minimize risk of spills and leaks

Public education and involvment

ED1: Comprehensive stormwater/watershed education program
PI1: Watershed public participation plan

Illicit dishcarge control

Ill1: Spill prevention and response program
Ill2: Prevent, detect, and control illicit discharges

Standard practices for new development

ND2: Coordinate erosion control practices with land owners
ND3: NEPA project review involvment
ND4: Comprehensive pollutant discharge program for construction sites
ND6: Incentives and/or requirements for land owners to insure damages due to erosion and/or sediment depostion are compensated

Structural controls

STR1, STR2: Evaluate the need for stormwater treatment facilities
STR3: Support tree planting programs
STR4: Review and modify existing design standards for drainage flood control structures
STR5: Encourage public and private groups to research better methods to improve stormwater quality

Planning system preservation/development

PS3: Modify landscape requirements to encourage the reduction of use of pesticides, herbicides, and feritlizers.

APPENDIX B

MONITORING DATA

Table 2.1 – ODOT's Roadwaste Management Project.

Data tables represent samples collected for pilot projects under the Roadwaste Management Project. This data represents the pollutant levels found in ODOT pilot projects including the Rocky Butte Berm, Compost, and Flocculent studies. Random grab samples taken from the berm, compost cells, and vactor trucks treated with flocculent, were tested for pollutant levels.

Table 2.2 – 1999 Monitoring data collected for ODOT stormwater facility pollutant characterization project.

This data represents water and soil samples that were collected from stormwater detention facilities located in East Portland (District 2B). ODOT will be compiling data on pollutant levels from these ponds over time to determine if and when pollutants reach toxic levels.

Table 2.3 – CMA Research Data

This data represents samples collected by the USGS for the CMA Research Project. Surfacewater samples were collected during and after storm events in areas where CMA was applied to the roadway. Data will be analyzed to determine CMA migration from the roadway and its effects on water quality. Table consists of preliminary data, with a formal USGS report expected for publication this year.

Table 2.1
Street Sweeping Data

		Rocky Butte Water Analyses		
		11/13/1998	1/28/1999	3/10/1999
Parameter		Concentration (ppm) ml/L		
Metals				
	Cadmium	ND	ND	ND
	Copper	ND	ND	ND
	Lead	ND	ND	ND
	Zinc	0.02	0.04	ND
TCLP Metals				
	Cadmium	ND	ND	ND
	Copper	ND	ND	ND
	Lead	ND	ND	ND
	Zinc	0.08	0.29	ND
EPA Method 8310				
	Acenaphthene	ND	ND	ND
	Acenaphthylene	ND	ND	ND
	Anthracene	ND	ND	ND
	Benzo(a)anthracene	ND	ND	ND
	Benzo(a)pyrene	ND	ND	ND
	Benzo(b)fluoranthene	ND	ND	ND
	Benzo(g,h,I)perylene	ND	ND	ND
	Benzo(k)fluoranthene	ND	ND	ND
	Chrysene	ND	ND	ND
	Dibenzo(a,h)anthracene	ND	ND	ND
	Fluoranthene	ND	ND	ND
	Fluorene	ND	ND	ND
	Indeno(1,2,3-cd)pyrene	ND	ND	ND
	Naphthalene	ND	ND	ND
	Phenanthrene	ND	ND	ND
	Pyrene	ND	ND	ND
TPH - HCID (+/-)				
	Gasoline	-	-	ND
	Diesel	-	-	ND
	Motor Oil	-	-	0.6
	Hydrocarbons > C28	-	-	ND
	Surrogate Recovery %	-	-	88%
Other				
	Conductivity - umhos/cm	310	24000	260
	pH	-	-	8.93
	Total Suspended Solids	-	-	8
	Total Oil & Grease	ND	ND	-
	Nitrate	ND	0.2	ND
	ortho phosphate	ND	ND	ND
	BOD 5-day	ND	ND	ND
	Total Kjeldahl Nitrogen	0.6	3.5	ND
	Total Phosphorus	0.06	ND	0.1
	Ammonia Nitrogen	ND	ND	ND

D = Analyte Detected
ND = Analyte Not Detected

Table 2.1
Street Sweeping Data

		Rocky Butte Soil Analyses					
		07/01/98	11/13/1998	1/28/1999	3/10/1999	6/11/1999	6/11/1999
Parameter		Concentration (ppm)					
Total Metals							Run-Off
	Cadmium	ND	ND	0.6	ND	ND	ND
	Copper	28.00	34	33	4	52	28
	Lead	40.00	ND	51	80	78	49
	Zinc	140.00	160	120	170	230	110
TCLP Metals							
	Cadmium	ND	ND	ND	ND	ND	ND
	Copper	0.13	34	0.1	0.09	0.4	ND
	Lead	ND	ND	ND	ND	0.5	0.2
	Zinc	2.30	6.1	1.9	1.7	2.9	1.5
TPH - HCID (+/-)							
	Gasoline	ND	ND	ND	ND	ND	ND
	Diesel	ND	ND	ND	ND	ND	ND
	Motor Oil	-	-	2000	1100	ND	ND
	Hydrocarbons > C28	D	D	D	D	>C24 D	>C24 D
	Surrogate Recovery %	110.00	112%	120%	50%	99.97%	117.60%
	TPH-Gx Total	-	-	-	ND	ND	ND
	TPH-Dx Total	2000.00	1100	-	ND	ND	ND
EPA Method 8310							
	Acenaphthene	ND	ND	ND	ND	ND	ND
	Acenaphthylene	ND	ND	ND	ND	ND	ND
	Anthracene	ND	ND	ND	ND	ND	ND
	Benzo(a)anthracene	ND	ND	ND	ND	ND	ND
	Benzo(a)pyrene	ND	0.17	0.14	0.061	ND	0.05
	Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND
	Benzo(g,h,I)perylene	ND	ND	ND	0.3	ND	ND
	Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND
	Chrysene	ND	ND	ND	ND	ND	ND
	Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND
	Fluoranthene	ND	ND	ND	ND	ND	ND
	Fluorene	ND	ND	ND	ND	ND	ND
	Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND
	Naphthalene	ND	ND	ND	ND	ND	ND
	Phenanthrene	ND	ND	ND	ND	ND	ND
	Pyrene	ND	ND	ND	ND	ND	ND

D = Analyte Detected

ND = Analyte Not Detected

Table 2.1
Street Sweeping Data

	Compost Cells Water Analyses						
	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6	Cell 7
	06/21/99	06/21/99	06/21/99	06/21/99	06/21/99	06/21/99	06/21/99
Parameter	Concentration (ppm)						
Total Metals							
Cadmium	-	ND	-	-	-	-	ND
Copper	-	0.0920	-	-	-	-	0.0210
Lead	-	ND	-	-	-	-	ND
Zinc	-	0.142	-	-	-	-	0.0660
TCLP Metals							
Cadmium	-	ND	ND	ND	-	-	ND
Copper	-	ND	0.134	0.177	-	-	ND
Lead	-	ND	ND	ND	-	-	ND
Zinc	-	ND	ND	ND	-	-	ND
TPH - HCID (+/-)							
Gasoline	ND	ND	-	-	-	-	ND
Diesel	D	D	-	-	-	-	D
Heavy Oil Range Hydrocarbons	D	D	-	-	-	-	D
Surrogate Recovery %	87.6	65.1	-	-	-	-	100
EPA Method 8310							
Acenaphthene	-	ND	ND	-	ND	-	ND
Acenaphthylene	-	ND	ND	-	ND	-	ND
Anthracene	-	ND	ND	-	ND	-	ND
Benzo(a)anthracene	-	ND	ND	-	ND	-	ND
Benzo(a)pyrene	-	ND	ND	-	ND	-	ND
Benzo(b)fluoranthene	-	ND	ND	-	ND	-	ND
Benzo(g,h,I)perylene	-	ND	ND	-	ND	-	ND
Benzo(k)fluoranthene	-	ND	ND	-	ND	-	ND
Chrysene	-	ND	ND	-	ND	-	ND
Dibenzo(a,h)anthracene	-	ND	ND	-	ND	-	ND
Fluoranthene	-	ND	ND	-	ND	-	ND
Fluorene	-	ND	ND	-	ND	-	ND
Indeno(1,2,3-cd)pyrene	-	ND	ND	-	ND	-	ND
Naphthalene	-	ND	ND	-	ND	-	ND
Phenanthrene	-	ND	ND	-	ND	-	ND
Pyrene	-	ND	ND	-	ND	-	ND

D = Analyte DETECTED
ND = Analyte NOT DETECTED

Table 2.1
Street Sweeping Data

	Compost Cells Soil Analyses						
	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6	Cell 7
	04/30/99	04/30/99	04/30/99	04/30/99	04/30/99	04/30/99	04/30/99
Parameter	Concentration (ppm)						
Total Metals							
Cadmium	ND	0.686	0.758	ND	0.963	ND	0.734
Copper	41.4	ND	29.5	11.7	42.2	21.4	34.9
Lead	33.1	32.8	37.5	15.7	44.3	37.6	38.6
Zinc	159.0	321	163	76.1	163	106	133
TCLP Metals							
Cadmium	ND	ND	ND	ND	ND	ND	ND
Copper	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	0.705
Zinc	1.50	0.737	0.682	0.930	1.42	1.14	1.42
TPH - HCID (+/-)							
Gasoline	ND	ND	ND	ND	ND	ND	ND
Diesel	ND	ND	ND	D	D	D	D
Heavy Oil Range Hydrocarbons	D	D	D	D	D	D	D
Surrogate Recovery %	NA	N/A	N/A	N/A	N/A	N/A	N/A
TPH-Dx Total	ND	ND	ND	N/A	ND	N/A	221
Heavy Oil Hydrocarbons - Total	469	482	802	N/A	1230	N/A	931
EPA Method 8310							
Acenaphthene	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ND	174	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,I)perylene	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND
Chrysene	318	216	259	ND	212	180	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	457	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	221	ND	ND	ND	446	228	ND
Pyrene	423	241	239	374	315	228	ND

D = Analyte DETECTED
ND = Analyte NOT DETECTED

Table 2.1
Street Sweeping Data

		Flocculent Study- Water Analysis (sweepings/vactor waste)				
		Pre-treatment	Pond Treatment	Initial Post Treatment	Final Post Treatment	Post Treatment
		06/22/99	7/6/99	7/6/99	7/6/1999	7/8/99
Parameter		Concentration ppm				
Metals						
	Cadmium	0.0190	0.0100	0.0155	0.0130	ND
	Copper	1.28	0.441	0.938	0.611	0.175
	Lead	2.21	2.16	6.14	2.50	0.716
	Zinc	7.20	2.39	3.47	2.77	0.838
Other						
	Conductivity	125(uS/cm)	173(uS/cm)	118(uS/cm)	171(uS/cm)	53.0(uS/cm)
	pH	7.73	7.20	6.87	6.89	6.13
	Sillica (SIO2)	7.12	14.7	9.89	13.7	11.9
	ortho phosphate	0.0383	ND	0.0858	ND	0.0291
	Total Phosphorus	7.96	0.620	7.69	6.85	13.3
	BOD	24.5	80.4	49.8	109	13.5
	Ammonia Nitrogen	0.360	2.22	0.724	2.26	ND
	Total Kjeldahl Nitrogen	10.6	24.3	19.0	35.8	7.33
	Total Suspended Solids	2150	1560	4310	2820	1960
	Oil & Grease	ND	ND	ND	ND	ND
	Nitrate-nitrogen	-	ND	ND	ND	139
TPH - HCID (+/-)						
	Gasoline Range Hydrocarbong	D	D	D	D	ND
	Diesel Range Hydrocarbons	D	D	D	D	ND
	Heavy Oil Range Hydrocarbons	D	D	D	D	D
	Surrogate: 1-Chloroociadecane (%)	107	77.8	138	78.8	84.5
EPA Method 8310						
	Acenaphthene	ND	-	-	-	-
	Acenaphthylene	ND	-	-	-	-
	Anthracene	ND	-	-	-	-
	Benzo(a)anthracene	0.388	-	-	-	-
	Benzo(a)pyrene	0.574	-	-	-	-
	Benzo(b)fluoranthene	0.638	-	-	-	-
	Benzo(g,h,I)perylene	0.596	-	-	-	-
	Benzo(k)fluoranthene	0.262	-	-	-	-
	Chrysene	0.532	-	-	-	-
	Dibenzo(a,h)anthracene	0.310	-	-	-	-
	Fluoranthene	0.648	-	-	-	-
	Fluorene	ND	-	-	-	-
	Indeno(1,2,3-cd)pyrene	0.466	-	-	-	-
	Naphthalene	ND	-	-	-	-
	Phenanthrene	ND	-	-	-	-
	Pyrene	0.586	-	-	-	-

D = Analyte DETECTED
ND = Analyte NOT DETECTED

Table 2.1
Street Sweeping Data

		Flocculent Study- Soil Analysis (sweepings/vactor waste)		
		Pre-treatment 06/22/99	Post Treatment 7/6/99	Post Treatment 7/8/99
Parameter		Concentration ppm		
Metals				
	Cadmium	1.37	-	-
	Copper	80.1	65.7	-
	Lead	122	333	-
	Zinc	499	-	-
	Silicon	594	-	-
TCLP Metals				
	Cadmium	ND	-	-
	Copper	0.161	-	-
	Lead	ND	-	-
	Zinc	3.38	-	306
TPH - HCID (+/-)				
	Gasoline Range Hydrocarbong	ND	ND	ND
	Diesel Range Hydrocarbons	ND	ND	ND
	Heavy Oil Range Hydrocarbons	D	D	D
	Surrogate: 1-Chloroociadecane (%)	151	82.4	84.5

D = Analyte DETECTED
ND = Analyte NOT DETECTED

Table 2.2
Detention Pond Data
Water Analyses

		Airport Way Pond	148th Pond	181st W. Pond	181st E. Pond
		3/10/99	6/21/99	6/21/99	6/21/99
Parameter		Concentration (ppm)			
Metals					
	Cadmium	ND	ND	ND	ND
	Copper	ND	ND	ND	ND
	Lead	ND	ND	ND	ND
	Zinc	ND	0.05	0.05	ND
TCLP Metals					
	Cadmium	ND	ND	ND	ND
	Copper	ND	ND	ND	ND
	Lead	ND	ND	ND	ND
	Zinc	ND	0.05	0.02	ND
TPH - HCID (+/-)					
	Gasoline	ND	ND	ND	ND
	Diesel	ND	ND	ND	ND
	Motor Oil	7.00	4	4	ND
	Hydrocarbons > C24	D	D	D	D
	Surrogate Recovery %	66%	70%	90%	90%
Other					
	Fecal Coliform or Total Coliform	-	4100 T	14,400 T	42 T
	Total Suspended Solids	2000.00	16	14	9
	pH	7.40	7.27	7.85	0.5
	ortho Phosphate	ND	ND	170	140
	Total Phosphorus	2.00	0.3	0.6	8.12
	Nitrate	ND	0.8	9	ND
	Biochemical Oxygen Demand	22.00	12	ND	ND
	Chemical Oxygen Demand	-	-	0.1	9
	Ammonia Nitrogen	ND	0.5		
	Conductivity umhos/cm	610.00	170	0.5	0.5
	Total Kjeldahl Nitrogen	5	3.8	1.4	1.2
EPA Method 8310					
	Acenaphthene	-	ND	ND	ND
	Acenaphthylene	-	ND	ND	ND
	Anthracene	-	ND	ND	ND
	Benzo(a)anthracene	-	ND	ND	ND
	Benzo(a)pyrene	-	ND	ND	ND
	Benzo(b)fluoranthene	ND	ND	ND	ND
	Benzo(g,h,I)perylene	-	ND	ND	ND
	Benzo(k)fluoranthene	-	ND	ND	ND
	Chrysene	ND	ND	ND	ND
	Dibenzo(a,h)anthracene	ND	ND	ND	ND
	Fluoranthene	ND	ND	ND	ND
	Fluorene	ND	ND	ND	ND
	Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND
	Naphthalene	ND	ND	ND	ND
	Phenanthrene	ND	ND	ND	ND
	Pyrene	ND	ND	ND	ND

D = Analyte Detected
ND = Analyte Not Detected

Table 2.2
Detention Pond Data
Soil Analyses

Parameter	Airport Way 03/10/99	Airport Way 4/23/99	148th Pond 6/21/99	181st W. Pond 6/21/99	181st E. Pond 6/21/99
	Concentration (ppm)				
Total Metals					
Cadmium	0.5	N/A	3.7	1.1	1.4
Copper	27	N/A	33	32	28
Lead	31	N/A	48	39	44
Zinc	150	N/A	130	190	180
TCLP Metals					
Cadmium	ND	N/A	ND	0.03	ND
Copper	0.05	N/A	0.4	ND	ND
Lead	ND	N/A	0.3	0.3	0.3
Zinc	2.2	N/A	3.3	4.9	4.6
TPH - HCID (+/-)					
Gasoline	ND	ND	-	ND	ND
Diesel	ND	ND	ND	ND	ND
Motor Oil	-	-	3000	12,000	6,000
Hydrocarbons > C28	-	-	D	D	D
Surrogate Recovery %	101%	109%	114%	102%	50%
TPH-Dx Total	D	547	-	-	-
EPA Method 8310					
Acenaphthene	ND	N/A	ND	ND	ND
Acenaphthylene	ND	N/A	ND	ND	ND
Anthracene	ND	N/A	ND	ND	ND
Benzo(a)anthracene	ND	N/A	ND	ND	ND
Benzo(a)pyrene	0.12	N/A	ND	ND	ND
Benzo(b)fluoranthene	0.2	N/A	ND	ND	ND
Benzo(g,h,I)perylene	0.2	N/A	ND	ND	ND
Benzo(k)fluoranthene	ND	N/A	ND	ND	ND
Chrysene	ND	N/A	ND	ND	ND
Dibenzo(a,h)anthracene	ND	N/A	ND	ND	ND
Fluoranthene	ND	N/A	ND	ND	ND
Fluorene	ND	N/A	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.18	N/A	ND	ND	ND
Naphthalene	ND	N/A	ND	ND	ND
Phenanthrene	ND	N/A	ND	ND	ND
Pyrene	ND	N/A	ND	ND	ND

D = Analyte Detected
ND = Analyte Not Detected

Table 2.3
CMA Research Results

		BEAR CREEK NR FAUBION LOOP BRIDGE, OR			BEAR CREEK UPSTREAM OF FAUBION LOOP BRIDGE,		
		*Average	Maximum	Mininum	*Average	Maximum	Minimum
WATER TEMP	Celsius	5.75	6.6	5.1	5.94	>6.5	4.60
BAROMETRIC PRESSURE	mm of Hg	727.18	762	715	723.00	727.00	715.00
SPECIFIC CONDUCTANCE	us/cm	36.55	60	29	33.00	45.00	12.00
DISOLVED OXYGEN	mg/L	10.96	11.6	10.2	11.00	11.60	9.60
DISOLVED OXYGEN	% Saturation	91.82	98	83	93.00	97.00	81.00
CHEMICAL OXYGEN DEMAND	mg/L	10.00	10	<10	10.13	11.00	<10
FIELD pH	Standard	6.78	7	6.5	6.87	7.30	6.50
NITROGEN, AMMONIA, DISOLVED	mg/L	0.02	0.026	<.020	<.020	<.020	<.020
NITROGEN, AMMONIA + ORGANIC TOTAL	mg/L	0.10	0.16	E.06	0.08	<.10	E.05
NITROGEN, NO2+NO3 DISOLVED	mg/L	0.42	0.533	0.282	0.501	0.66	0.35
PHOSPHATE, ORTHO, DISOLVED	mg/L	0.01	.01	.00	0.01	0.01	0.00
PHOSPHORUS TOTAL	mg/L	<.05	<.050	.039	<.050	<.050	<.050
PHOSPHORUS, ORTHO, DISOLVED	mg/L	0.00	.003	.001	0.00	0.00	0.00
CARBON, ORGANIC DISOLVED	mg/L	1.25	2.40	1.00	1.11	1.70	0.90
HARDNESS TOTAL	mg/L	9.64	10.00	9.00	10.50	11.00	10.00
CALCIUM, DISOLVED	mg/L	2.66	2.80	2.40	2.80	3.00	2.60
MAGNESIUM DISOLVED	mg/L	0.71	0.78	0.66	0.77	0.80	0.73
CADMIUM DISOLVED	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CADMIUM WATER UNFILTERED	ug/L	<1	<1	<1	<1	<1	<1
COPER DISOLVED	ug/L	<1.0	<1.0	<1.0	1.0	2.00	<1.0
COPER TOTAL RECOVERABLE	ug/L	<1	1	<1	<1	<1	<1
LEAD DISOLVED	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LEAD TOTAL RECOVERABLE	ug/L	<1	1	<1	<1	<1	<1
ZINC DISOLVED	ug/L	<20	<20	<20	<20	<20	<20
ZINC TOTAL RECOVERABLE	ug/L	<10	<10	<10	<10	<10	<10

* Average of 11 Samples

CMA Research Results

		ROADSIDE DITCH SOUTH OF HWY 26, OR			ROADSIDE DITCH NORTH OF HWY 26, OR		
		*Average	Maximum	Minimum	*Agerage	Maximum	Minimum
WATER TEMP.	Celsius	5.07	6.1	4.3	5.27	6.1	4.0
BAROMETRIC PRESSURE	mm of Hg	724	726	718	723	726	715
SPECIFIC CONDUCTANCE	us/cm	31.2	38	25	22.6	28	18
DISOLVED OXYGEN	mg/L	10.7	11.3	9.9	8.0	9.0	7.3
DISOLVED OXYGEN	% Saturation	88.3	92	83	67	73	62
CHEMICAL OXYGEN DEMAND	mg/L	<10	11	<10	12.6	18	<10
FIELD pH	Standard	6.6	7.1	6.1	6.5	7.2	6.1
NITROGEN, AMMONIA, DISOLVED	mg/L	<.020	<.020	<.020	.021	.031	<.020
NITROGEN, AMMONIA + ORGANIC TOTAL	mg/L	.1	0.15	E.06	.16	.28	.10
NITROGEN, NO2+NO3 DISOLVED	mg/L	0.515	0.645	0.381	0.136	.773	<.050
PHOSPHATE, ORTHO, DISOLVED	mg/L	.005	0.01	0	.01	.01	.01
PHOSPHORUS TOTAL	mg/L	<.050	<.050	<.050	0.05	<.050	.032
PHOSPHORUS, ORTHO, DISOLVED	mg/L	0.002	0.003	0.001	.003	.004	.002
CARBON, ORGANIC DISOLVED	mg/L	2.5	3.7	2	4.1	5.0	3.7
HARDNESS TOTAL	mg/L	8.7	9	8	9.1	10	9
CALCIUM DISOLVED	mg/L	2.23	2.3	2.1	2.2	2.4	2.1
MAGNESIUM DISOLVED	mg/L	0.74	0.77	0.71	.87	1.0	.80
CADMIUM DISOLVED	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CADMIUM WATER UNFILTERED	ug/L	<1	<1	<1	<1	<1	<1
COPER DISOLVED	ug/L	<1.0	<1.0	<1.0	1.5	2.5	<1.0
COPER TOTAL RECOVERABLE	ug/L	<1	<1	<1	1	2	<1
LEAD DISOLVED	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LEAD TOTAL RECOVERABLE	ug/L	<1	<1	<1	<1	<1	<1
ZINC DISOLVED	ug/L	<20	<20	<20	18	<20	E7.8
ZINC TOTAL RECOVERABLE	ug/L	<10	<10	<10	<10	<10	<10

* Average of 10 Samples

CMA Research Results

SAMPLE SITE		CULVERT IN WEMME, OR*	BEAR CREEK DOWNSTREAM OF FAUBION LOOP BRIDGE, OR*	
SAMPLE DATE		1/14	2/21	4/6
SAMPLE TIME		1515	1350	1030
WATER TEMP	Celsius	8.8	5.9	5.3
BAROMETRIC PRESSURE	mm of Hg	726	723	728
SPECIFIC CONDUCTANCE	us/cm	5	36	39
DISOLVED OXYGEN	mg/L	-	11.5	10.9
DISOLVED OXYGEN	% Saturation	-	97	90
CHEMICAL OXYGEN DEMAND	mg/L	-	<10	12
FIELD pH	Standard	-	6.9	7.1
NITROGEN, AMMONIA, DISOLVED	mg/L	0.042	<.020	<.020
NITROGEN, AMMONIA + ORGANIC TOTAL	mg/L	0.54	<.10	<.10
NITROGEN, NO2+NO3 DISOLVED	mg/L	<.050	0.387	0.195
PHOSPHATE, ORTHO, DISOLVED	mg/L	0.01	0.01	0.01
PHOSPHORUS TOTAL	mg/L	0.509	<.050	<.050
PHOSPHORUS, ORTHO, DISOLVED	mg/L	0.003	0.002	0.002
CARBON, ORGANIC DISOLVED	mg/L	0.5	0.8	0.8
HARDNESS TOTAL	mg/L	3	10	10
CALCIUM DISOLVED	mg/L	0.8	2.8	2.8
MAGNESIUM DISOLVED	mg/L	0.18	0.67	0.71
CADMIUM DISOLVED	ug/L	<1.0	<1.0	<1.0
CADMIUM WATER UNFILTERED	ug/L	<1	<1	<1
COPER DISOLVED	ug/L	<1.0	<1.0	<1.0
COPER TOTAL RECOVERABLE	ug/L	14	<1	<1
LEAD DISOLVED	ug/L	<1.0	<1.0	<1.0
LEAD TOTAL RECOVERABLE	ug/L	16	<1	<1
ZINC DISOLVED	ug/L	<20	<20	<20
ZINC TOTAL RECOVERABLE	ug/L	0.05	<10	<10

* = Actual sample data, numbers have not been averaged.

APPENDIX C

ODOT BETTERMENT FUNDING

Table 3.1- Betterment Projects for FY 1997-1999

This table summarizes projects funded by the ODOT betterment budget for Clean Water and completed during FY 1997-1999 year. Much of the work funded by betterment projects overlaps with or is tied to work done for ODOT's Clean Water Program (NPDES) and is not included in the NPDES budget.

Table 3.1
Betterment Projects

Project Date	District	Activity
8/1/97	Operations	Culvert Inventory
8/1/97	Operations	ODFW Technical Staff
8/7/97	10	Culvert Replacement/Modification
9/4/97	13	Streambank Restoration
11/7/97	12	Shoulder Protection and Erosion Control
11/13/97	12	Erosion Control
2/18/98	Operations	Staff Training
2/6/98	1	Erosion Control
2/18/98	5	Culvert Replacement/Modification
2/18/98	5	Culvert Replacement/Modification
2/18/98	4	Culvert Replacement/Modification
2/18/98	4	Culvert Replacement/Modification
2/18/98	4	Culvert Replacement/Modification
2/18/98	3	Culvert Replacement/Modification
2/18/98	4	Culvert Replacement/Modification
2/27/98	4	Culvert Replacement/Modification
2/27/98	4	Culvert Replacement/Modification
2/27/98	4	Culvert Replacement/Modification
2/27/98	4	Culvert Replacement/Modification
3/2/98	13	Erosion Control
3/10/98	2B	Attenuator Purchase
3/10/98	2B	Erosion Control
3/24/98	4	Culvert Replacement/Modification
3/24/98	4	Culvert Replacement/Modification
3/24/98	4	Culvert Replacement/Modification
3/24/98	9	Erosion Control
3/31/98	8	Slope Protection/Erosion Control
4/2/98	11	Erosion Control
4/1/98	6	Maintenance Management System Maps
4/21/98	7	Culvert Replacement/Modification
4/24/98	Operations	DEQ Technical Assistance
5/4/98	10	Replace Scupper & Culvert
5/8/98	Operations	Maps: Equipment
5/8/98	Operations	Maps: Safety
5/14/98	1	Culvert Repair
5/14/98	1	Install Fish Weirs/Culvert Repair
5/14/98	5	Culvert Replacement
5/14/98	5	Kirk Creek Erosion Control Project
6/1/98	2C	Construct Sediment Detention Pond
7/21/98	13	Culvert Replacement/Modification
7/21/98	2C	Slope Vegetation Project
7/27/98	9	Slide Stabilization
8/17/98	14	Jordan Valley Seeding Project
9/3/98	12-Jan	Deicer Mixing Station
9/1/98	11	Deicer Mixing Station
9/1/98	6	Deicer Mixing Station
9/16/98	10	Seeding Project
9/16/98	Operations	Technical Assistance
9/16/98	14	Vale Seeding Project
9/23/98	14	Deicer Mixing Station
9/23/98	2C	Deicer Mixing Station
11/10/98	10	Sediment Containment Project
5/3/99	10	Erosion Control
5/11/99	13	Culvert Replacement/Modification
5/20/99		Seeding Project

APPENDIX D

Oregon Plan for Salmon and Watersheds Annual Report (March 1999) - Table Summary

This table summarizes work ODOT has done during the 1998-1999 year for the Oregon Plan for Salmon and Watersheds. Much of the work done for the ODOT Oregon Plan Program overlaps with, or is tied to work done for ODOT's NPDES program.

Appendix D
ODOT Oregon Plan Annual Report 1998-1999

Action Item	Task/Commitment	Priority	Timeline
National Pollutant Discharge Elimination System Permit Program	Erosion Control for construction	Existing Program	Ongoing
	Completion of Maintenance Management System review for water quality and habitat: guide developed for best management practices	Existing Program	Revisited and out to NMFS for review
	Illicit discharge investigations to locate and remove non-storm water runoff from system	Existing Program	Ongoing
Endangered Species Act Compliance	Develop batch project biological assessments (BA) for geographic areas for construction projects	Existing Program	Ongoing for new construction projects
	Educate staff and county transportation staff on ESA	Existing Program	Ongoing
Integrated Pest Management	Develop 15 district IPM Plans, hold stakeholder meeting	Existing Program	Complete/Annually ongoing
	Upper Rogue Valley vegetation management program prototype		Complete
Hazardous Materials	Identify pollutant loading based on Average Daily Traffic for waste disposal guidelines	Existing Program	Ongoing
	Establish best management practices for maintenance	Existing Program	Revisited and out to NMFS for review (See #3)
ODOT 1: Salmon Recovery Program manager	Hire permanent position to manage the ODOT Salmon Recovery Program	High	Completed
ODOT 2: Culvert Inventory, Assessment and Remediation	Locate, prioritize and repair culverts that do not provide fish passage	High	Inventory complete, Repairs Ongoing
ODOT 3: Maintenance Management Maps	Develop for district roads, resource inventory maps and restricted activity zone maps that identify specific resource issues and management solutions	High	Ongoing- Southern Oregon Northern California (SONC) ESU complete
ODOT 4: Participate in Watershed Councils	ODOT District Managers or their representatives will participate in watershed councils/planning	High	Ongoing
ODOT 5: Master Plan for Surplus Design	Identify ODOT properties suitable for slide disposal sites, or mitigation sites	Deleted	Incorporated into #3
ODOT 6: Environmentally Sensitive Design	Integrate environmental requirements and needs into project design	High	Ongoing
ODOT 7: Storage and Disposal Plan for Woody Debris	Develop storage and disposal plan for woody debris	High	Ongoing

Action Item	Task/Commitment	Priority	Timeline
ODOT 8: Statewide Erosion Control Handbook	Develop a statewide erosion control handbook	Medium	Ongoing
ODOT 9: Review Winter Maintenance Activities and sidecast sweeping	Review winter maintenance activities and develop geographically appropriate best management practices	Medium	Complete
ODOT 10: Aggregate Permit Review	Review instream, or near stream aggregate permits for material source	Deleted	Deleted from plan, very few permits, those reviewed in conjunction with DSL
ODOT 11: Integrated Pest Management	Develop a statewide IPM program	Deleted	Deleted from plan, covered by ORS, existing program
ODOT 12: Education	ODOT will educate staff and stakeholders on impacts to resources and ways to minimize impacts	Medium	Ongoing- See Education under ESA
ODOT 13: Preferential Use of Bioengineering Solutions	Use bioengineering Solutions	Medium	Ongoing
ODOT 14: Burning in Riparian Area	Avoid burning in riparian area	Medium	Deleted from plan, it is standard operating procedure
ODOT 15: Habitat for Fish in Wetland Mitigation	Include habitat for fish in wetland mitigation as appropriate	Medium	Ongoing
ODOT 16: Minimize Potential Impacts of Accident Spills	Map sensitive areas	High	Included in ODOT 3
ODOT 17: Aquatic Pest Plant Management Plan	Develop an aquatic pest plant management plan	Medium	Deleted from plan, ODOT has no authority over water resources
ODOT 18: Retention of Surplus Properties	Retention of Surplus Properties	Low	Future activity- Legislative Authority
ODOT 19: Mitigation banking	Develop credit/debit system for wetland mitigation, fish enhancement	Low	Ongoing
ODOT 20: Compliance Review	Develop review process for construction permit compliance	Medium	Ongoing

APPENDIX E

DEQ Response to Request for ODOT MS4 Statewide Permit

Letter from DEQ

Oregon

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

November 16, 1998

Sue Chase, Program Manager
Office of Maintenance
Department of Transportation
800 Airport Road SE
Salem, OR 97310

Re: Statewide Municipal Separate Storm Sewer System (MS4) Permit for the Oregon Department of Transportation (ODOT)

Dear Sue:

We have received ODOT's request for a single statewide National Pollution Discharge Elimination System MS4 permit in your letter dated November 2, 1998. ODOT is currently a co-permittee on six MS4 permits (Portland, Gresham, Eugene, Salem, Clackamas County, and USA) under Phase 1 of the NPDES storm water program. Implementation of Phase II will require many more jurisdictions to have MS4 permits, additionally complicating ODOT's administration and compliance with the permits.

As you know, the *Nationwide Urban Runoff Program* (NURP) concluded that urban runoff contains significant levels of heavy metals, coliform bacteria, excessive nutrients, oxygen demand, and suspended solids. In addition, findings in the *Analysis of Oregon Urban Runoff Water Quality Monitoring Data Collected form 1990 to 1996* (Woodward-Clyde, 1997) were consistent with NURP; and showed that transportation land use generally showed higher concentrations for all pollutants than residential or open space areas, and similar to the higher levels of contamination from industrial land use. The federal storm water regulations 40 CFR Part 122 authorizes NPDES States to require permits for a significant contribution of pollutants to waters of the United States (§122.26(a)(1)(v)). Subsequently, §122.26(a)(5) authorizes the issuance of such permits on a system-wide or jurisdiction-wide basis, both of which are applicable to ODOT. The preamble repeatedly uses State highway systems as an example of entities that could need a system wide permit.

Therefore, DEQ agrees to issue a statewide NPDES storm water permit to ODOT for discharges from the storm water drainage system associated with ODOT owned and maintained facilities and properties located within the highway right-of-way, and from ODOT construction activities in Oregon.

ODOT has been a co-permittee on six MS4 permits that meet the requirements of Phase I of the storm water regulations. The program ODOT will develop for this statewide permit is also intended to meet the Phase II requirements expected to become effective in 1999. Because the requested permit is not simply a consolidation of existing permits,

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

ODOT will continue to produce an annual report addressing the following points:

A. Implementation of storm water management program
B. Proposed changes to storm water management program
C. Any revisions
D. Data summary and analysis
E. Fiscal report
F. Enforcement actions and public education
G. Water quality improvement or degradation

We look forward to the successful development and implementation of ODOT's statewide NPDES MS4 permit. If you have any questions regarding the application requirements, please contact Ann Levine at (503) 229-5073.

Sincerely,

Jan Renfroe

Jan Renfroe, Manager
Policy and Program Development
Water Quality Division

cc: Bob Baumgartner, NWR:WQ
Barbara Burton, WR - Salem
Dennis Belsky, WR - Medford
Kerri Nelson, WR - Eugene
Joni Hammond, ER - Pendleton
Dick Nichols, ER - Bend
Mike Llewelyn, HQ:WQ
Ann Levine, HQ:WQ

ATTACHMENTS

OREGON DEPARTMENT OF TRANSPORTATION

MAINTENANCE REGION AND DISTRICT MAP

SEPTEMBER 1998

ROUTE AND HIGHWAY NUMBERS

- INTERSTATE
- U.S. ROUTE
- OREGON ROUTE
- 103 STATE HIGHWAY NUMBER

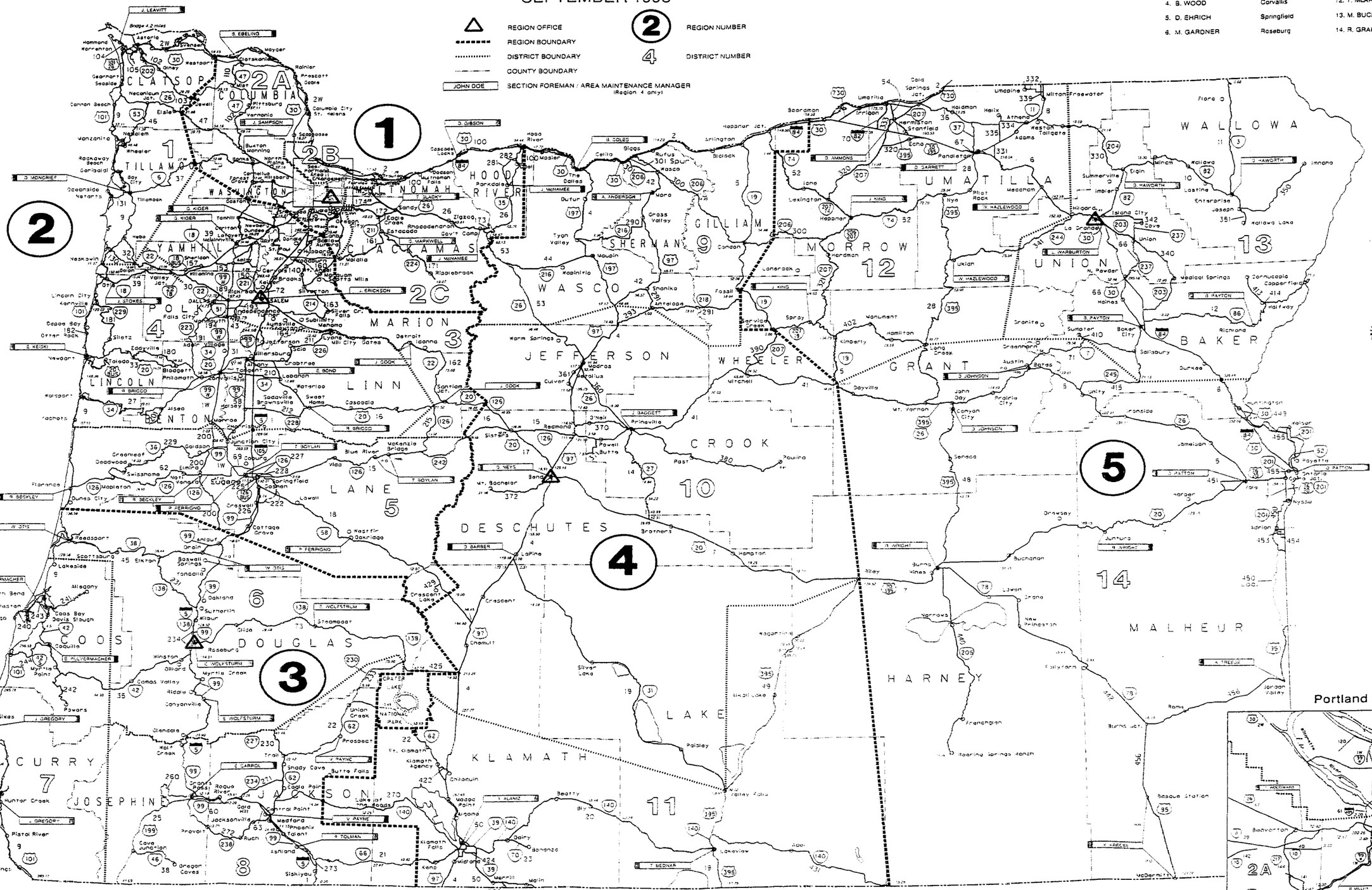
- REGION OFFICE
- REGION BOUNDARY
- DISTRICT BOUNDARY
- COUNTY BOUNDARY
- JOHN DOE — SECTION FOREMAN / AREA MAINTENANCE MANAGER (Region 4 only)
- (2) REGION NUMBER
- 4 DISTRICT NUMBER

REGION MANAGERS

1. K. VAN SICKEL	Milwaukie
2. G. JOHNSON	Salem
3. P. MATHER	Roseburg
4. S. MACNAB	Bend
5. T. SCHUFT	La Grande

DISTRICT MANAGERS

1. M. DICHARI	Astoria
2A. R. KROOP	Sylvan
2B. L. OLSON	Clackamas
2C. C. SCISCIONE	Troutdale
3. R. SJOLANDER	Salem
4. B. WOOD	Corvallis
5. D. EHRICH	Springfield
6. M. GARDNER	Roseburg
7. M. GARDNER	Coos Bay
8. J. VIAL	Medford
9. S. WILKINS	The Dalles
10. P. CREEDICAN	Bend
11. R. DORAN	Klamath Falls
12. T. McARTOR	Pendleton
13. M. BUCHANAN	La Grande
14. R. GRAHAM	Ontario



Section VI

MULTNOMAH COUNTY DRAINAGE DISTRICT NO. 1 (MCDD#1)

PENINSULA DRAINAGE DISTRICT NO. 1 (PENN 1)

PENINSULA DRAINAGE DISTRICT NO. 2 (PENN 2)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

(NPDES)

ANNUAL REPORT

AUGUST 1999

MULTNOMAH COUNTY DRAINAGE DISTRICT NO. 1
1880 NE ELROD DR., PORTLAND, OR. 97211

INCLUDING MANAGEMENT AND NPDES REPORTING FOR:
PENINUSLA DRAINAGE DISTRICT NO. 1
PENINSULA DRAINAGE DISTRICT NO.2

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

NPDES MS4
ANNUAL COMPLIANCE REPORT
FISCAL YEAR 1998-1999

Overview

This is the fourth annual compliance report under the five-year NPDES MS4 permit. MCDD continues as the contracted manager of Peninsula Districts 1 and 2, and this report covers the activities of all Districts over the past year.

The compliance activities of this year fell into three broad categories:

> Maintaining ground gained in basic compliance and enforcement;
>
> Completing upgrades of District and private systems to improve overall effectiveness in complying with the permit; and,
>
> Beginning work on longer-term programs that will realize major environmental improvements in the Columbia Slough watershed.

Program Accomplishments

Compliance and Enforcement The District has continued a major effort to review all new development plans in the watershed for compliance with erosion control, stormwater management and all other aspects of the MS4 permit. As a result of District review, developers have increased usage of open drainage systems, with associated environmental enhancements, as opposed to traditional (piped) design approaches. The District also carefully reviews the adequacy of their proposed design regarding other aspects of the stormwater collection and treatment system. In cases where a design issue may be outside the technical expertise of the District (e.g. a particular water quality treatment technique), the District works with other review agencies to assist with resolving the problem. During construction of a development, the District checks for proper erosion control measures on the construction site and adequacy of the permanent stormwater facilities. During the past year, the District placed considerable pressure on a developer who was not following acceptable erosion control practices, including recovery of costs for restoration. This was an unusual, extreme case. Typically, the District succeeds in working with developers early in their design and construction work stages, and the developers appreciate understanding requirements and options at a stage of their process when changes can be handled efficiently.

All District operations and maintenance activities include compliance with the MS4 permit as a top priority. Waterborne maintenance is the method of choice, and every effort is made to avoid equipment maneuvering on waterway banks to minimize the potential for sedimentation. The maintenance of a large system of drainage ways and levees necessarily involves filling of slumped areas and other activities where soil is exposed. The District places highest priority on conducting these activities in a manner that demonstrates the best possible example to the general public of care in the operation, control of erosion and effective replanting.

Upgrading District And Private Systems During this year, the District completed the major capital improvements that were discussed in the reports over the past two years. Several pump stations were completely overhauled and updated, and major sections of the levees were rebuilt. The requirements of the MS4 permit were a key goal in all of these projects, both during construction and in the operational capabilities of the completed projects. For example, a new telemetry system will provide monitoring of water flow in the Columbia Slough from multiple locations—a substantial data collection improvement that will increase understanding of the natural environment of the slough. The levee improvement projects stabilized bank areas that were damaged in recent storms or high-water events or replaced inadequate fill material with proper soils. The improved levee integrity increases safety and protects against bank slides into the waterway.

The District influenced a number of private developers over the past year to improve compliance with the MS4 permit through enhancing the natural environment. In one example, the developer is widening an existing drainage ditch and constructing new 'benches' on the sides of the ditch to provide emergent wetland habitat. Elsewhere on this same site, the developer is re-establishing a wetland area that was lost to farming decades ago. The District worked with this property owner to produce this site plan as the most effective use of the property for stormwater management, environmental compliance and attractiveness of the site to prospective tenants.

Long-Term Environmental Improvements All compliance activities under the MS4 permit are intended to improve the natural environment of the Columbia Slough each year the permit is in force and into the longer-term future. During this fourth year of the current permit, the District has invested time and funding in several projects that are producing important information today and will improve the watershed in the future.

The leading example of this work is a "General Investigation" study, sponsored by the Corps of Engineers, which is investigating the feasibility of improving habitat and water quality through creation of a meandering channel in the Columbia Slough with adjacent areas of emergent wetlands and riparian habitat. The City of Portland, Bureau of Environmental Services, is the local sponsor, and the District is a project partner. The District is providing expertise on the Slough, resources to support site visits and funding for sediment analysis and permit preparation. Many other agencies and groups are participating in direct and advisory roles. While physical construction of this project is

years into the future, the project is producing considerable data and analysis of the in-stream and riparian conditions along the Slough that are useful for many other purposes.

The District has taken the lead in developing a pilot project of the meandering channel concept that is fully permitted and will begin construction in fall of this year. The Bridgeton Slough will be dredged by the District using a barge-mounted excavator. The bottom soils will be placed along the banks of the slough to form habitat 'benches' at different elevations. BES will plant the benches with appropriate vegetation. This project has attracted considerable interest from resource agencies, and the adjacent community associations are participating. The experience gained in the Bridgeton Slough will benefit the project design for the main channel of the Columbia Slough. The planning of the Bridgeton project, permit applications, meetings with neighborhood associations and similar work was supported and/or conducted by the District during the past year of operations under the current MS4 permit.

Other projects with longer-term benefits include evaluation of macrophyte growth in the Columbia Slough and evaluation of test plots of different seed mixes for levee planting. As with all other programs of this type, the District works with stakeholders who would be affected by the project, and the District provides leadership or team support as required to make progress on the issue.

This overview has covered some of the high points of the District's activities pertaining to the MS4 permit for both the past year and looking to the future. The pages that follow describe specific activities falling under the Best Management Practices in the permit that pertain to the District.

MCDD#1/PEN1/PEN2
YEAR 4 - NPDES PERMIT
1998-99 Annual Report

OM1.
Develop an O&M plan for Public stormwater quality structural controls and evaluate existing practices that affect water quality.

Outcome

- **O&M manuals for the following District operations have been completed:**

(A) VEGETATION MANAGEMENT FOR:
Levees
Slough Banks (Land Base)
Slough Banks (Water Base)
Secondary Ditches
Nuisance Aquatic Vegetation

(B) SEDIMENT AND DEBRIS REMOVAL FOR:
Columbia Slough
Secondary Ditches
Culverts and Pipes

(C) PUMP STATIONS FOR:
Trash Rakes
Pumps
Outfalls
Flow Control Structures

(D) Equipment Operations
Leak Prevention
Load Cover
Washing

(E) Nuisance Animal Control
(F) Shop and Repair Yard
(G) Spill Containment

- ***Review and describe existing O&M practices***

(A) VEGETATION MANAGEMENT

Mechanical Control: Whenever mowing or cutting applications are used a log boom or an anti-drift device is placed down stream of the operations to capture all debris entering the waterway. The debris is then removed and disposed of at a wood-recycling center. This method of containment has proven to be very effective on controlling downstream blockages.

Chemical Control: MCDD has two certified applicators and one trainee. These certifications require that 15 hours of continuing education be taken every year to maintain their certification. Knowing the environmental concerns and the newest types of herbicides approved for use around waterways enables the applicators to select the most environmentally safe herbicide for the each application.

Outcome

The District has set up test plots with Hobbs and Hopkins (Grass seed growers) to experiment with a variety of dwarf seed mixes to improve erosion control coverage and vegetation maintenance. These test plots are designed to work on step banks and high sun areas.

MCDD is always looking for alternative methods for vegetation control verses herbicide use.

BIOLOGICAL CONTROL: MCDD is presently working with the City of Portland, Bureau of Environmental Services to re-vegetate the slough banks to promote native vegetation and shade out the nuisance vegetation.

MCDD will be writing a management plan to Oregon Fish and Wildlife. The management plan will be for a conditional use permit to use Grass Carp in the secondary drainage systems.

(B) SEDIMENT AND DEBRIS REMOVAL:

Sediment Removal: Sediments are removed with an excavator, whether it is a land base or a water base operation. In order to keep the turpidity to a minimum the District shuts down their pumping operations during the time of excavation to reduce or stop the flows in the Columbia Slough and/or the secondary ditch systems. This allows time for the suspended sediment to re-deposit in the general area of disturbance. This method has been very effective for the District and we will continue the practice.

Debris Removal: An ongoing operation for the District. MCDD is working with SWINE, Inverness County Jail, Columbia River Corrections and Columbia Watershed Council in locating and picking up illegal dumped debris. The debris is sorted for recycling by one of the Corrections facilities and transported by MCDD. Metro has provided MCDD with a disposal program for the Columbia slough clean up and tire recycling.

(C) PUMP STATIONS:

MCDD inspects, services and records water elevations at the pumping facilities bi-weekly. All debris collected at the trash rakes and culverts is sorted by inmates and disposed of at the appropriate locations.

MCDD has installed automated trash racking systems at the primary pumping facilities and removed the log booms that used to stop the floating debris from plugging up the grates. With this system in place the debris is cleared from the water as it reaches the pump station and not accumulating in the water at the log boom.

The Districts have installed log booms in other high debris collection sites. This enables the District to collect floating debris in central areas. Instead of the debris floating throughout the slough.

Flow control structures are inspected and serviced bi-annually

(D) EQUIPMENT OPERATIONS:

All equipment is inspected every morning for hydraulic leaks and repaired if any are identified before the machine can be operated.

MCDD has upgraded seven (7) pieces of construction equipment to prevent high maintenance cost for services of hydraulic leaks

(E) NUISANCE ANIMAL CONTROL

MCDD has an annual permit from the Oregon Department of Fish and Wildlife to control nuisance animals in and around the waterways. MCDD employs its' own licensed trapper for this project. MCDD and or its contractor are required to notify and file reports with ODFW whenever we enforce these controls.

(F) SHOP AND REPAIR YARD:

All work performed on equipment is done in the shop where all fluids and metals can be collected and disposed of in a safe environmentally manner.

(G) SPILL CONTAINMENT:

MCDD has installed spill containment compartments in all their storage buildings. All trucks, excavating and water base equipment has its own 35 gal spill containment kit. These kits are inspected on a monthly basis. All of MCDD's employees have been trained as a first responder and how to handle small non-hazardous spills.

PROJECTED ACTIONS FOR NEXT YEAR

MCDD will re-write their O&M manuals for water base and erosion control to decrease environmental impacts.

The Hydraulic cross section requirements will be reduced to save bank vegetation.

OM3

Develop and implement conscientious pesticide/herbicide application program. Determine effectiveness of other methods for managing nuisance and non-native vegetation. Develop overall management program for application of herbicides in and around environmentally sensitive areas.

Outcome

An Integrated Pest Management Program (IPM Program), has been developed to control invasive non-native plants using weed suppression interventions, when and where they are needed, and with what strategy and mix of tactics to use. Thus an effective, safe, and environmentally sound IPM Program can be implemented in and around public right of ways as well as in and around environmentally sensitive areas. Copies of the IPM Program are on file in the District Office.

In addition, the IPM Program has been extended to assess the macrophyte problem, which is expanding because of the continued implementation of low water flow management for addressing eutrophication. The macrophyte problem is apparent in all of the districts. Currently, the City of Portland and University of Portland are working with the districts in assessing the severity of the problem and possible management alternatives for control.

MCDD#1 has implemented our IPM program within the other districts.

As per our IPM Program, all records are kept on file at the District Office.

OM4.
Continue to enforce regulations and educate regarding truck hauling practices and the stormwater quality impacts of leaks, spills or other releases.

* **Enforce state statutes for District owned vehicles and contractor vehicles. Maintenance records on haul vehicles and documentation on requirements to contractors.**

Outcome

We have developed a maintenance and safety check for all District vehicles. All dump boxes were inspected and rebuilt to insure tightness in order to limit spillage. Operators were trained not to over-fill boxes, which would result in spillage. All operators carry shovels with them so that if there is spillage it can be cleaned up immediately.

If the area that we are hauling from is muddy, appropriate haul roads and rock aprons are being constructed and, if need be, truck tires are washed before entering public roads.

* **Notify proper authorities of hauling violations within and around the District.**

* **Disseminate educational materials, as available and approved, to District employees and contractors.**

Outcome

Weekly safety and training meetings have been established. One hour per week, all employees receive training and information concerning appropriate measures to be taken concerning activities to take place. Proper hauling and truck handling training films have been made available. In addition, District employees have attended classes sponsored by the Columbia Corridor Association teaching safe operator practices.

Projected Actions for Next Year.

Continue with the existing on-going programs. Require re-certification of all District equipment operators and annual educational classes.

ED1.
Develop comprehensive education program.

* **Provide MCDD1 representative to attend meetings of the City committee as appropriate.**

Outcome

Both the Manager and Assistant Manager have attended and participated in City programs.

* **Hold internal meetings and disseminate education materials to District staff.**

Outcome

Incorporated into our weekly safety/training meetings

* **Provide volunteers access to District property.**

Outcome

Participated in Slough Regatta and provided educational groups such as the Urban League of Portland tours as well as presentations with the City of Portland.

The Slough Regatta is a significant program, which gets interested people out on the water of the slough. A total different perspective of the slough and associated system is seen from the water. Getting the awareness for the potential of the slough is a significant step in revitalizing the resource.

For the past four years the district has provided 4 or more employees for monitoring and helping during the regatta. In addition, our barges and workboats were used to help facilitate getting in and out of the water and providing patrol boats in case of emergencies.

* **Send personnel to educational workshops offered locally.**

Outcome

Have sent key personnel to a number of training programs concerning the proper handling of hazardous materials and knowing the proper notification process when spills are observed.

Projected Actions for Next Year

Most of our internal BMP's for ED1 have been integrated with OM1 for ease of report administration. All other aspects remain the same. Will hold annual general assessment meetings with the City of Portland, DEQ and District staff regarding the impacts and benefits of our low flow management and IPM Programs.

PI1.
Develop comprehensive public participation program.

Integrated PI1 with OM1 and ED1

IND1.
Control discharges from industries and solid waste facilities.

* **Review permits for all development on properties within the District.**

Outcome

This is the fourth year that we have implemented a permit review program for all properties within the district. We review building permits, Land Use Reviews (LUR's), land sub-divisions and parcels plats as well as being involved in planning and policy decisions.

Once a week, a district representative goes to the City of Portland building permit office and the planning bureau office to review applications for the previous week. File numbers are obtained and flagged so that a decision cannot be made until the district has reviewed the proposal and the City has received our written comments. Contact is usually made directly with the developer/owner and plan sets of the proposal are forwarded directly to this office.

A district representative does a preliminary review of the plans and develops a quick outline of what the proposal is and exactly where it is located in the district. Then, once a week, staff meets to review, discuss and assign each project. The project is listed on a status board with the review person's initials and are discussed as to weekly status until the written decision is submitted to the appropriate entity.

Areas of primary review are, type of land use, location of property i.e. next to a slough, levee or wetland, location of any outfalls into an open waterway or if it discharges into a City system, amount of impervious surface, available future expansion, impact to adjoining property, erosion control, proper DSL/COE permits etc...

Plan sets are then filed at the district office by location for future reference.

This program has been implemented in PENN1 and PENN2 over this last year. Results have bee very beneficial in making the developer aware of the presence and concern of and by the District.

MCDD linked up with the COP computer network system to expedite the permit review process.

Projected Actions for Next Year.

Continue with program and continue to review internally to make more efficient.

* **Notify City or appropriate entity when problems are observed.**

Outcome

District is usually the first to notify of problems within the drainage system. Our people are continually out in the area and on the waterways and are trained to notify if they see something of concern. They all carry radios and or cellular phones and notification is usually immediate.

Documentation of any notification is recorded on daily work reports by the employees and follow up is encouraged by the employees.

Projected Actions for Next Year.

We have participated in numerous meetings with the City to identify problems in the system where we may notify of a problem and then we figure out who is responsible to take appropriate action. Responsibility to take action has been a topic of many meetings with the City and other Bureaus. We will continue to work with the City and others to rectify the problem of responsibility. In most cases where we have notified the owner, the problem gets taken care of prior to needing to notify any other entity.

IND2.
Control discharge of animal waste to the MS4.

* **Notify and assist ODA of violations within the District boundaries.**

Outcome

The district has continued to work with various horse boarding stables and cattle ranchers to fence the animals away from the ditches and open sloughs where historically the animals have been left free to graze and water.

We inspect these lands periodically and encourage the owners to contact the district if they have any questions. Grazing is currently limited to Port of Portland lands and one boarding stable for MCDD#1 and Portland Meadows for PENN2.

PEN 2 Specific Actions

PEN 2 has met with Portland Meadows (horse racing track) owners and management along with the Department of Agriculture to discuss the need to control the discharge of pollutants associated with their horse stable area. During the racing season, November through April, up to 500 horses are stabled at their facility. During the off-season up to 200 horses are housed there. High fecal readings in the ditch system have historically been recorded downstream of the facility.

The owners have contracted with a consulting firm, SRI Shapiro, to work on development of storm water plan, which addresses the proper handling and disposal of the animal waste. A preliminary report has been issued to the Department of Agriculture and the district.

The Department of Agriculture has extended the time frame for compliance for Portland Meadows. PM is currently negotiating with the City for discharging their animal waste into the sanitary system. Because of capacity constraints, the City is not able to accept all of the effluent and is working with PM to develop a loading standard for them to design to.

On July 28, 1999 the Environmental Protection Agency issued an NPDES non-compliance order to Portland Meadows. Portland Meadows is presently negotiating with EPA and the COP to take corrective actions.

Project Actions for Next Year.

We will continue to monitor the properties where we have restricted use and will contact any new additional grazing uses.

PEN 2 will continue to work with Portland Meadows, Environmental Protection Agency, Department of Agriculture, City of Portland and Department of Environmental Quality to develop and implement a suitable animal waste management plan.

ILL1.
Manage a spill prevention and response program that reduces the frequency and impact of spills to the stormwater system.

* **Send representatives to interagency committee meetings.**

Outcome

A district representative has attended and participated in every meeting the City has sponsored for the ILL1 program. This program has involved numerous agencies and has helped identify the role of the district in handling and responding to spills. As a result, it has been determined that when a spill is observed the first response is the responsibility of the Fire Bureau. The Fire Bureau will then assess the situation and request appropriate assistance from other entities.

* **Develop and implement a spill response program for operation of all District equipment. Provide training for all District personnel on the effective implementation of spill response. Provide adequate equipment and materials for all spill response. Perform quarterly, spill containment exercises.**

Outcome

The district has developed an internal spill response program pertaining to the operation of all district related maintenance activities. This program ranges from containment of hydraulic fluids from heavy equipment, changing fluids and oils in the shop where spills can be cleaned up instead of outside on the ground, pump station automatic oilers and plugging of direct drains to the wet well sumps.

Additionally, the district helps BES and other bureaus in containment of spills in the waterways. All district vehicles carry spill containment kits and soaker booms and all district personnel are trained in their proper use and deployment. Some of our key personnel have taken the 40-hour HAZMAT training and refresher courses. We have assisted the Portland fire bureau in the design and construction of an open ditch to use for training exercises.

Projected Actions for Next Year.

Continue our involvement in the ILL1 program with the City and other entities. Continue internal training and implementation of spill containment for district operations.

* **Continue to inventory, mark and investigate suspect barrels currently in the Columbia Slough. Determine if they are empty or still may contain material. Remove if they are empty; mark the location and inventory on map. Describe condition and observations during removal. Report to appropriate agency for removal action.**

Outcome

The district has continued to remove and inventory the primary sloughs and drainages for illegally disposed of barrels or containers. These areas were mapped and recorded and meetings were held with DEQ and the city concerning the proper handling and disposal.

Projected Actions for Next Year

Continue with program to identify any additional buried treasures and provide for proper disposal.

* **Train operations manager and equipment operator as first responders when possible hazardous materials or spills are identified.**

Outcome

Training of key district personnel has been done and annual classes and additional training will be provided. Currently are working with City of Portland Fire Bureau to train as first responder for identifying types of spills and appropriate action to be taken.

Project Actions for Next Year

The Fire Bureau has personnel trained for handling hazardous materials and it has been determined it is their responsibility to take the lead. We will still be able to assist the Fire Bureau if requested in order to gain access to the spill or dump site. There is a certain amount of liability that the district may not want to incur. We will continue to evaluate our in field involvement with the ILL1 team.

ILL2.
Develop and implement a program to prevent, search for, detect, and control illicit discharges to the stormwater system.

* **Develop IGA with COP to assist City on this task. Assist City as needed with follow-up for investigations. Notify property owners along waterways of illegal dumping in the vicinity of a water resource and assist, where practicable, with the removal of the debris from the waterways for their disposal. If property owners refuse to cooperate, notify ODF&W, DEQ, COP and State Police of the dumping violations.**

Outcome

Cooperation continues between the district, City and other agencies in investigating and stopping illegal dumping.

Projected Actions for Next Year.

Continue to work with the City and other agencies to stop illegal dumping.

ND2. & ND4 Combined

Work with landowners, tenants, and/or public agencies to apply practical erosion control practices to reduce pollutant discharges associated with undeveloped and developed properties and parklands.

- **Report all observed erosion control problems to the City.**

Outcome

Through the Districts building permit review process, monitoring of erosion controls on new development site is occurring. When we observe that construction sights do not have erosion control in place or that the erosion control devices are not functioning as needed we notify the building bureau and give them the permit reference number or the address for enforcement.

MCDD also works with landowners and developers directly to improve, maintain and replace erosion control devices as needed.

Specific Violations in PEN2 and MCDD#1

The District worked hand in hand with DEQ and the City of Portland to enforce and fine Mariners Gale for erosion control violations this past year. Remediation and cleanup of the Bridgeton slough was completed this year. In addition, numerous violations were observed in MCDD#1 and in most cases the developer responded to our concerns and fixed the problem.

Projected Action Next Year.

Review and work with the City to implement and improve on their new Erosion Control and Storm water Manuals.

STR1.
Evaluate need for new stormwater quality treatment facilities...

* **Track on-going and planned water quality facility projects and improvements, get involved in planning and review process.**

Outcome

The district is currently working with the City, Port of Portland and Air National Guard in review of all existing and proposed regional and private water quality facilities. The district currently maintains all of the public water control facilities by contract with the City and Port. Since we maintain them we assist in the design in order to facilitate efficient maintenance practices. This past year, we cleaned the facilities for the Port as well as surveyed the City facilities for deposition and impacts to proper functioning.

STR2/STR4
Determine practicability for retrofitting drainage and flood control facilities to address water quality. If practicable, develop plans and implement.

* **Work with the City to understand the current operation and function of District facilities. Evaluate the water quality benefits of changing the operations of the facilities and look at the operation scenarios.**

Outcome

The District participates in meetings with the City Bureaus, (Maintenance, Water, Environmental Services) and the City of Portland Commissioners. Including the Port of Portland, City of Gresham, City of Fairview, Oregon Department of Transportation and the National Guard forces to discuss water quality issues, erosion control and any new operational procedures the Districts may have or be looking at implementing.

As was previously mentioned, the District is concerned with the amount of aquatic weeds that have evolved into the system since the implementation of the low flow program. Evaluations and assessments are ongoing and the City and DEQ will be involved in the assessment.

MCDD is currently participating in a General Investigation study being sponsored by the US Corps of Engineers and the City of Portland. This study will determine whether the Columbia Slough will benefit in improved water quality and wildlife enhancement if the sediments are dredged and benches are created. The deepening of the channel and the planting of trees and shrubs on the benches will provide shad and cooler water temperatures.

MCDD has designed and is performing the same type of project in the NE Bridgeton Slough.

Projected Actions for Next Year

Continue current program with City, Port, and other agencies. Continue to work with consultant to help evaluate macrophyte problem and analyze water quality benefits versus operations problems.

Continue working towards a water level management IGA with the City, Port and DEQ for water quality issues.

STR3.
Support government and community tree planting program.

* **Develop and implement a pilot re-vegetation program for ditch slopes of the Columbia Slough. Work with the Port and City to re-vegetate bank slopes with native trees in order to increase shading of the waterways.**

Outcome

As was discussed earlier in BMP OM1 the district is working with the City in their re-vegetation program. The district has used equipment and labor to re-slope bank slopes and remove existing un-wanted vegetation, blackberries in order to facilitate planting and survival.

A number of sites in PEN1, PEN2 and MCDD#1 have been re-vegetated in cooperation with the City of Portland's' projects. The District continues to work with the City and other public groups to identify and re-vegetate existing ditches and slough banks.

PS2.
Evaluate practicality of providing financial incentives for property owners who protect natural areas considered to have valuable water quality characteristics.

* **Meet with the City of Portland and identify natural areas that may be of joint beneficial use for water quality and water quantity i.e. storage and conveyance. Once these areas are identified, participate in helping to develop incentive programs for the preservation of these areas.**

Outcome

The District has worked with three landowners to enhance 4.1 miles of ditch systems to improve water quality and connect wildlife corridors. See OM1.

PS3.
Inventory and map the storm sewer system.

* **Inventory outfalls discharging into the Upper Columbia Slough. Delineate the catchment areas for major outfalls.**

* **Develop and implement procedures for updating maps on a routine basis.**

Outcome

The District continues to conduct inventories of the storm sewer system. MCDD identifies and maps all outfalls from large to small. Most of the major slough has been mapped and we are in the process of mapping and inventorying the secondary ditches and sloughs. Also through the permit process, new outfalls are being documented and inspected by the district.

Projected Actions for Next Year

Continue with the program until all waterways are mapped and inventoried. MCDD#1. PEN1 and PEN2.

MCDD #1 - PEN #1 - PEN #2
NPDES ANNUAL REPORT FOR PORTLAND PERMIT AREA---PERMIT YEAR 4

BMP ID.	OVERALL INTENT, GOALS AND OBJECTIVES	PERMIT YEAR 4 KEY ACCOMPLISHMENTS	PROPOSED MODIFICATIONS TO SCHEDULE OR ACTIVITIES
OM1	Review & describe existing O&M practices Prepare O&M manuals for District operations Evaluate existing practices and make recommendations for improvements Develop O&M manual—implementation water based maint. Op. Imp. Water based as primary maint. Op. for Columbia Slough Focus on vegetation control/removal of debris & garbage Determine future min. hydraulic cross sections/Columbia Slough Perform cross sectional soundings of slough Estimate amounts of sediments to be removed Develop & implement pilot re-vegetation program	Re-evaluate O&M manuals for environmental impacts. Water base maintenance implemented for 2.5 miles of slough for vegetation control and 1.6 miles of ditches for sediment removal. Required development to re-establish lost storage capacity by re-constructing ditch systems on property. Established new criteria for Hydraulic model for flood control, water quality and habitat restoration. Performed sounding and cross section for Corps of Engineers General Investigation Study for the Columbia Slough. Started re-vegetation pilot program for grass seeds. Completed pump station and levee capital improvement projects for MCDD, Pen 2 and Pen 1.	Re-write O&M manuals for water base and erosion control procedures. Modify water base equipment to decrease environmental impacts. Integrate University of Portland Macrophytes model with SWMM model. Implement new programs and incentives for landowners and developers to enhance, restore and create open waterways. Establish new cross section design criteria for secondary drainage systems. Continue with water base programs.
OM3	Develop and implement conscientious pesticide program Assess effectiveness of other control methods Develop overall management program	Reviewed and modified training program for trainees. Evaluated a management plan for Grass Carp for vegetation control. Re-wrote Integrated Pest Management Plan.	Implement more training programs for employees. Submit a management plan for the use of Grass Carp in secondary systems.
OM4	Enforce state statutes for Dist. Vehicles and contractor vehicles Maint. Records on haul vehicles & documentation on repairs Notify proper authorities of hauling violations Disseminate educational materials to Dist. Employees and contractors	Established a vehicle maintenance program and hired another full time employee to implement program. Developed a computerized system to track programs Identified and notified various hauling violations	Re-design and construct new maintenance facility to control oil and grease from entering stormwater system. Improve employee-training programs.
ED1	Provide MCDD1 rep. to attend mtgs of City committee Hold internal meetings and disseminate educational materials to District employees	Operations manager participated in Public workshops and attended meetings for City of Portland programs. Weekly safety and educational meetings held with MCDD personal.	Continue with existing programs and evaluate employee-training program.

BMP ID.	OVERALL INTENT, GOALS AND OBJECTIVES	PERMIT YEAR 4 KEY ACCOMPLISHMENTS	PROPOSED MODIFICATIONS TO SCHEDULE OR ACTIVITIES
	Send personnel to educational workshops (local) District Staff Participate in Public Workshops & Projects	Participated in the Columbia slough regatta and provided educational slough tours to public agencies and community.	
IND1	Review permits new industrial/commercial development Notify City when problems are observed	Continue to review all permit applications within District boundaries. Networked with COP electronically.	Improve computer network with COP for review process. Develop training program for employees
IND2	Control discharge of animal waste to the MS4	Worked with EPA and Portland Meadows to eliminate discharge to waterways.	Investigate and monitor other facilities for violations
ILL1	Send representatives to interagency committee meetings Develop & implement spill response program Inventory, mark & investigate suspect barrels currently in environmental areas Train Operations Mgr. & equipment operator as hazardous materials handlers	Manager and operations manager participated in meetings.	Evaluate spill response program, training and certification requirements for operators and managers.
ILL2	Develop IGA with COP for investigations	Started development of IGA for investigations and notification with COP.	Complete IGA with the COP
ND2	Reduce Pollutant discharges and Erosion into System Report all observed erosion control problems to City	Active inspection program of construction sites for illegal discharges. Reported numerous violations to COP and DEQ	Continue with present programs. Review and comment on COP new erosion control code and manual.
ND4	Require adequate erosion and other pollutant control measures	Combined ND4 with ND2	See ND2
STR1	Track on-going and planned water quality facility projects/improvements get involved in planning and review process	Reviewed City of Portland, City of Fairview, City of Troutdale, City of Gresham and Oregon Department of Transportation proposed water quality facility plans for 1998-1999.	Continue to review plans proposals
STR2	Work with City to understand operation/function of District	Meeting are held regularly with Bureau of Maintenance, Environmental Services, Water, City Commissioners and the Port of Portland to educate and inform there personal on District issues and concerns.	Continue with present program.
STR3	Support Tree Planting Programs Along Waterways	Worked with BES on bank and wetland re-vegetation.	Enter into an IGA and develop design criteria to support both agencies needs and requirements.
STR4	Provide available drainage & flood control design manual references to the City of Portland	Combined with STR2	See STR2

BMP ID.	OVERALL INTENT, GOALS AND OBJECTIVES	PERMIT YEAR 4 KEY ACCOMPLISHMENTS	PROPOSED MODIFICATIONS TO SCHEDULE OR ACTIVITIES
PS2	Identify natural areas which may be of joint beneficial **us** quality and quantity	Combined with STR3	See STR3
PS3	Inventory outfalls discharging into the Upper Columbia Slough Develop and implement procedure for updating maps	Continues inspection of outfalls and COP notification.	Continue with programs
OA!	Program development and management Participate in IGA process Attend co-permittee meetings	Developing IGA's with COP, POP and DEQ Attended meetings regularly	Continue with program

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

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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

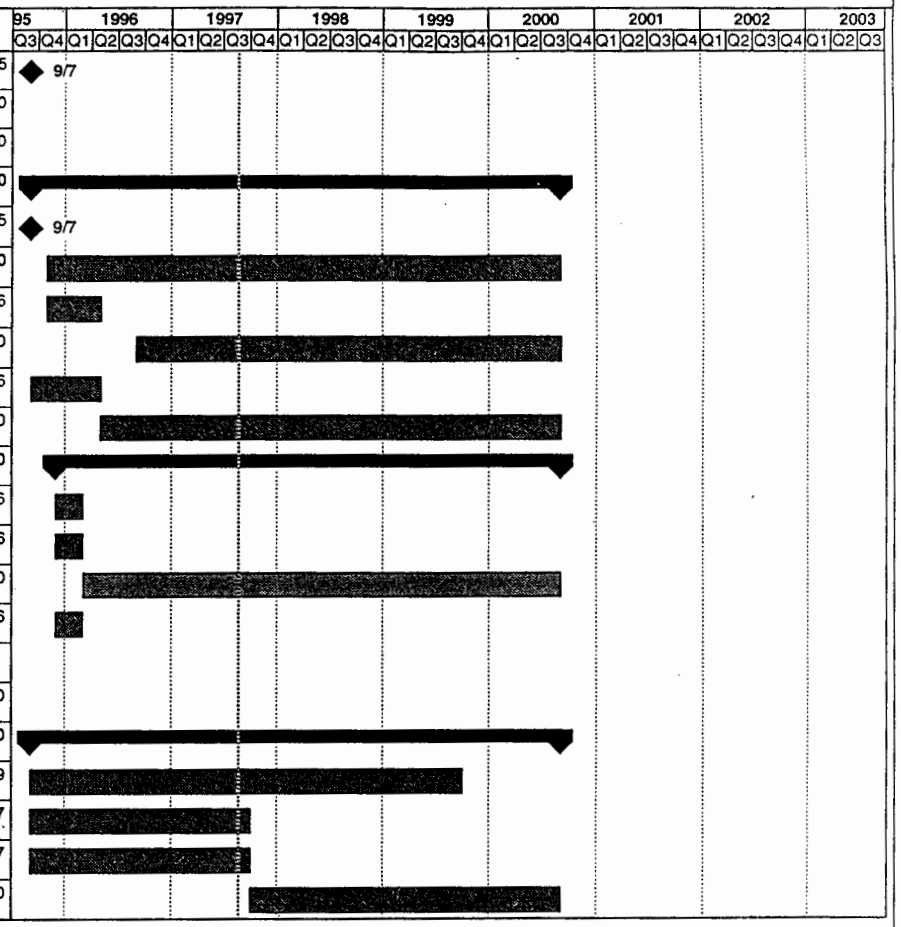
2. Each co-permittee shall be responsible for the portion of the system-wide report applicable to their individual jurisdiction. Individual co-permittees shall not be held responsible for the noncompliance of another co-permittee with the conditions of this permit.

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



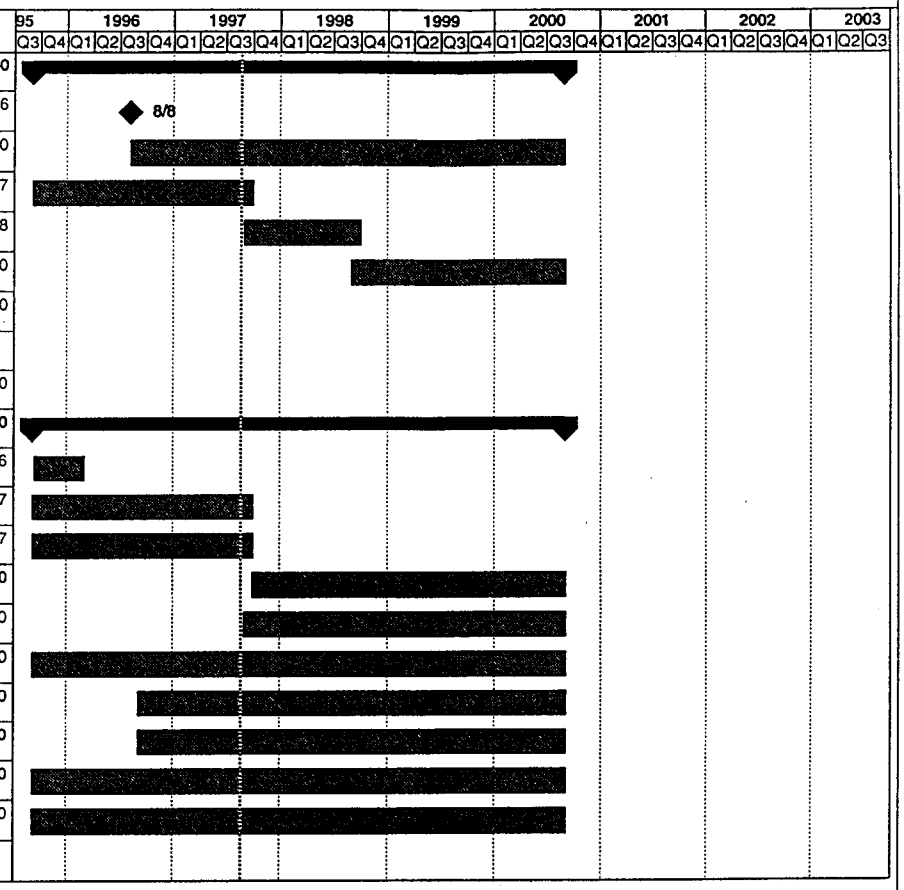
Project: Portland NPDES
Date: 8/21/97

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			

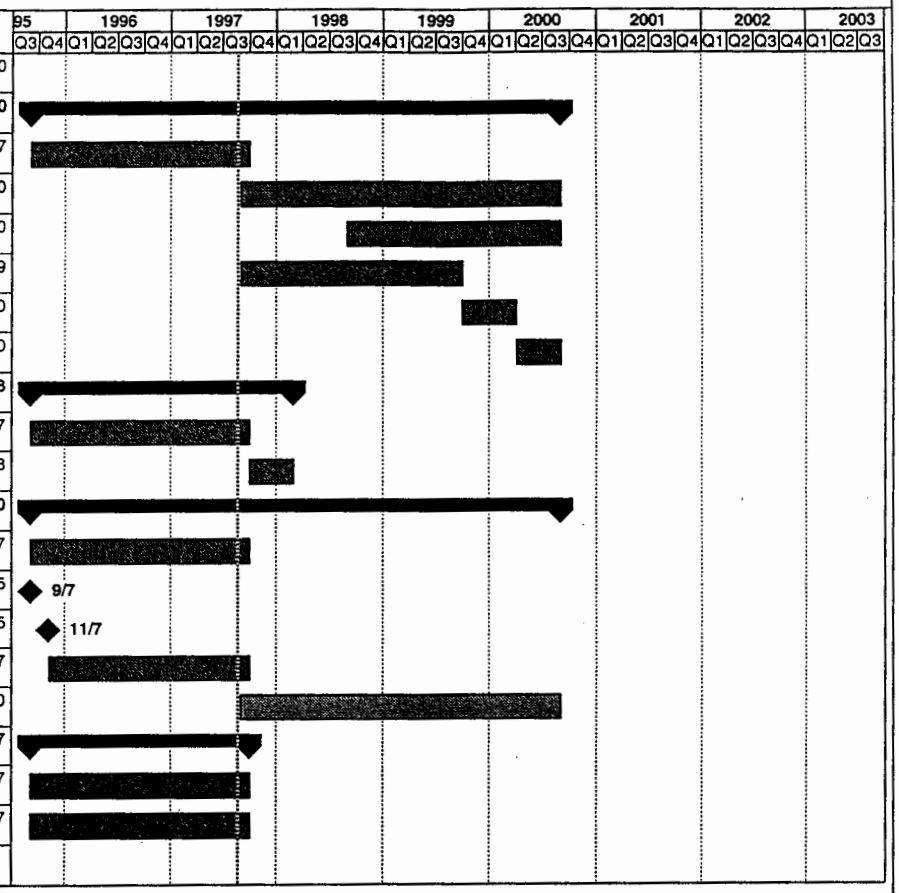
Project: Portland NPDES
Date: 8/21/97

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			



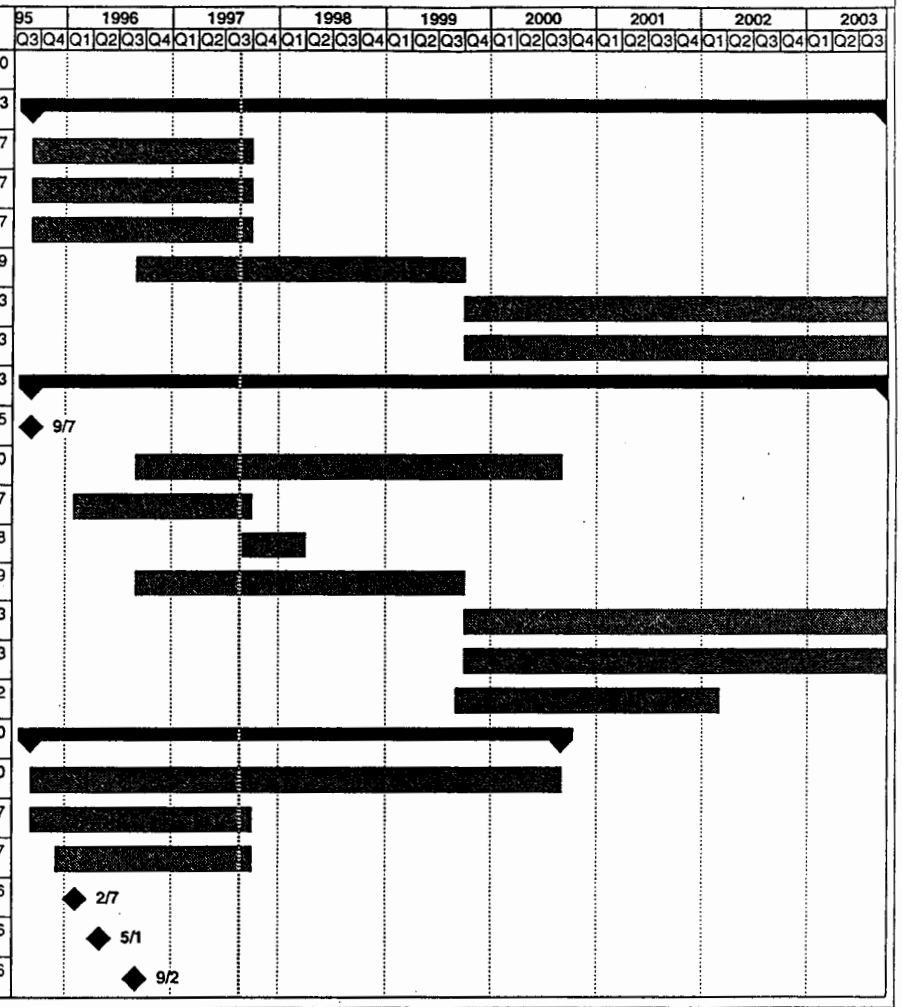
Project: Portland NPDES
Date: 8/21/97

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



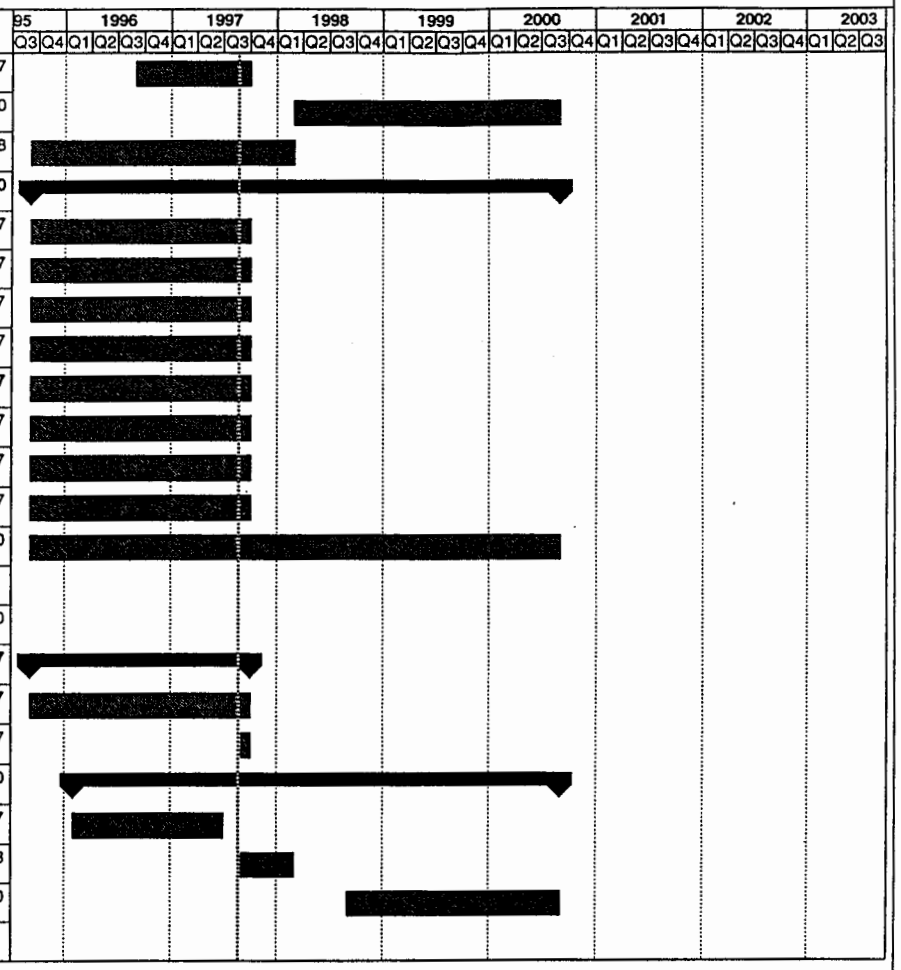
Project: Portland NPDES
Date: 8/21/97

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 ▼▬▼

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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
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(503) 229-5263 Voice
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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.