City of Portland, Oregon

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

Permit Number: 101314

ANNUAL COMPLIANCE REPORT NO. 20

Fiscal Year 2014-2015
(July 1, 2014 – June 30, 2015)

Prepared for:

Oregon Department of Environmental Quality

November 1, 2015

Submitted by:

City of Portland
Port of Portland

CITY OF PORTLAND
ENVIRONMENTAL SERVICES
1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ▪ Nick Fish, Commissioner ▪ Michael Jordan, Director

November 1, 2015

Lisa R. Cox
Municipal Stormwater Coordinator
Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

Dear Ms. Cox:

On behalf of the City of Portland and the Port of Portland, I am pleased to submit the enclosed *NPDES Annual Compliance Report No. 20*. This report fulfills reporting requirements for the Portland NPDES Municipal Separate Storm Sewer System (MS4) Discharge Permit. It provides information about activities that have been accomplished in accordance with the co-permittees' Stormwater Management Plans (SWMPs) during fiscal year (FY) 2014-15 (July 1, 2014 through June 30, 2015) and demonstrates the co-permittees' progress toward meeting the permit requirements and stormwater program goals for the past year.

Each co-permittee's section of the report (Section II for the City of Portland and Section III for the Port of Portland) details the activities implemented, program status, and any initiated or proposed program changes. A Monitoring Compliance Report that summarizes monitoring activities and results is included as Section IV. The raw monitoring data are available upon request on CD-ROM.

Please call me at 503-823-5737 if you have any questions concerning this report.

Sincerely,

Barbara Adkins
UIC/MS4 Section Manager

cc: Susan Aha, Port of Portland

The City of Portland complies with all non-discrimination laws including Title VI (Civil Rights) and Title II (ADA).
To request a translation, accommodation or additional information, please call 503-823-7740, or use City TTY 503-823-6868, or Oregon Relay Service: 711.

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

ANNUAL COMPLIANCE REPORT
Fiscal Year 2014-15
(July 1, 2014 – June 30, 2015)

We, the undersigned, hereby submit this annual compliance report for the Municipal Separate Storm Sewer System Discharge Permit No. 101314, in accordance with Schedule B, Section 5 of that permit. We certify, as required by 40 CFR Section 122.22, under penalty of law, that this document was prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Michael Jordan — 10/21/15
Michael Jordan
Director, Bureau of Environmental Services
City of Portland
Date

Vincent Granato — 10/19/15
Vincent Granato
Chief Operating Officer
Port of Portland
Date

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EXECUTIVE SUMMARY

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INTRODUCTION

This 20th *Annual Compliance Report* is submitted to the Oregon Department of Environmental Quality (DEQ) to fulfill reporting requirements for the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit (hereinafter referred to as the stormwater permit or permit) issued to the City of Portland and the Port of Portland (the co-permittees) by DEQ on January 31, 2011. The report provides information about activities that have been accomplished in accordance with the co-permittees' *Stormwater Management Plans* (SWMPs) during fiscal year (FY) 2014-15 (July 1, 2014 through June 30, 2015). It also includes a monitoring compliance report that summarizes monitoring activities conducted during FY2014-15.

CITY OF PORTLAND

Key activities and accomplishments for permit year 20 are summarized below and further described in Section II of this annual report.

- Conducted public involvement/education activities as a significant element of the Stormwater Program. Key activities included providing Clean Rivers Education Programs to students, awarding community stewardship grants, and involving community participants in events and activities.

- Conducted ongoing assessment, cleaning, maintenance, and repair of MS4 components.

- Continued to follow the best management practices outlined in ODOT's *Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices* as guidance for transportation-related maintenance activities.

- Inspected, and maintained as necessary, all stormwater and stormwater containment and pollution prevention facilities in City maintenance yards annually.

- Inspected and administered NPDES industrial stormwater permits for industries (and associated tenants) with stormwater discharge to the MS4.

- Continued to identify, investigate, control, and/or eliminate illicit discharges through the Illicit Discharge Detection and Elimination Program, Industrial Stormwater Management Program, and Spill Protection and Citizen Response Section.

- Conducted 4,775 erosion control-related inspections of private construction sites (citywide). Inspected 993 active public construction projects (citywide) with erosion control components.

- Approved permits for approximately 28 public works projects and 3,625 private projects subject to *Stormwater Management Manual* (SWMM) requirements.

- In accordance with *Stormwater Management Manual* requirements, approved permits for approximately 1,391 source control measures at sites with high-risk characteristics or activities.

- Continued to implement the Stormwater Management Facility Maintenance Inspection Program (MIP) for private stormwater management facilities. Inspected 645 properties (tax lots) with 1,340 associated stormwater management facilities.

- Continued the design and construction of multiple structural stormwater management facilities.

- Continued to provide technical assistance and grant funding for projects that incorporate green building principles, including stormwater pollution prevention and management.

- Continued Clean River Rewards to manage stormwater on private property. At the end of August 2015, a total of 54,280 utility ratepayers with active accounts have registered for stormwater discounts: 51,469 single-family residential ratepayers (accounting for a total of 114.2 million square feet of impervious area managed for stormwater) and 2,811 multifamily, commercial, and industrial ratepayers (accounting for a total of 94.9 million square feet of impervious area managed for stormwater).

- Acquired one acre of land in the Willamette Watershed and one-half acre of conservation easement area in the Johnson Creek Watershed as part of the Grey to Green Land Acquisition Program.

- Under the Watershed Revegetation Program, planted 32,944 trees on 190 acres. The program currently manages 1,748 project acres on both public and private property.

PORT OF PORTLAND

Key activities and accomplishments for permit year 20 are summarized below and further described in Section II of this annual report.

- The Port continues to conduct annual maintenance of the storm sewer system components, structural controls, and regular sweeping on specific Port-managed properties.
  - This effort included maintaining over 879 catch basins, inspection and maintenance of Port-owned water quality treatment facilities, cleaning 39,033 feet of storm line, and 4,128 hours of street sweeping. Together these tasks diverted 410.5 tons of potential pollutants from Port receiving waters.
- Port staff continued to implement the Illicit Discharge Detection and Elimination Program. The program involves field screening of priority outfalls and investigation of potential illicit discharges.

- Dry-weather field screening inspections were conducted at 66 outfalls Port-wide. As a result of these and other reports, 3 potential illicit discharges were investigated and resolved.

- Port staff continued to implement the Industrial Facility Inspection Program, inspecting a total of 29 priority industrial facilities Port-wide in fiscal year 2014. Staff provided technical assistance during these visits, while also setting timelines for correction of any deficiencies where appropriate.

- Port operating area staff received training on a variety of stormwater-related subjects, including pesticide application (15), stormwater pollution prevention and spill response 178, and erosion prevention (12). In addition, 72 new employees are trained on the importance of preventing pollutants from entering stormwater in the Port's new employee orientation program.

- The Port continued its support of organizations which work to promote watershed health including the Columbia Slough Watershed Council, the Regional Coalition for Clean Rivers and Streams, and Friends of Trees.

- The Port continues to coordinate with the Portland co-permittees, particularly the City of Portland, with regards to monitoring and compliance with MS4 deliverables in addition to the annual report.

- The Port continues to improve the process for implementing the Design Standards Manual.

  - The Port has not constructed treatment for airside projects completed in 2014 and 2015. The total number of acres requiring treatment for these Port capital projects is unknown; the Port is currently in the process of quantifying the deficit and determining the schedule for constructing treatment.

  - The Port has developed a Corrective Action Plan (CAP) for this issue. The Port's Environmental Management System (EMS) will document the actions taken and the timeline to complete these actions.

Section I
GENERAL INTRODUCTION

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The City of Portland's annual information is provided in **Section II** of the report.

The Port of Portland's annual information is presented in **Section III** of the report.

A Monitoring Compliance Report that summarizes monitoring activities and results is provided in **Section IV** of the report. The raw monitoring data are available upon request on CD-ROM.

PERMIT AREAS

The permit areas for the two co-permittees are as follows:

- **City of Portland:** Approximately 15,233 acres within the City of Portland's urban services boundary drain to a separate storm sewer system.

- **Port of Portland:** The Port owns approximately 5,497 acres within the City of Portland's urban services boundary. Much of this property drains to the Port's municipal separate storm sewer system and is regulated by the MS4 permit. This acreage includes Portland International Airport (PDX), four marine terminals, several industrial parks occupied by commercial tenants, mitigation sites, and undeveloped land.

The NPDES MS4 permit does <u>not</u> cover:
- Stormwater areas that flow to sumps
- Stormwater areas that flow to combined sewers
- Natural stream systems
- Direct stormwater discharges from private property to natural stream systems (without entering the MS4)
- Areas with no public stormwater infrastructure
- Areas with individual, general, or industrial stormwater permits

PERMIT BACKGROUND

DEQ issued the first stormwater permit for the MS4 within the Portland urban services boundary on September 7, 1995. DEQ renewed the permit for a second permit term in March 2004 and subsequently revised and reissued that permit on July 27, 2005. The co-permittees submitted a

permit renewal package for the third permit term to DEQ on September 2, 2008, and DEQ issued the third-term permit on January 31, 2011.

PROGRAM COORDINATION

The co-permittees share information about program development and implementation, BMP effectiveness, monitoring, and other issues related to the permit. This coordination avoids duplication and promotes cost-effective use of resources. To further ensure ongoing collaboration and efficiency, the City and Port have an Intergovernmental Agreement that allocates responsibilities and resources.

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

Section II
CITY OF PORTLAND

Section II
CITY OF PORTLAND

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INTRODUCTION

This annual report fulfills reporting requirements of the City of Portland's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit No. 101314. It identifies the activities the City has conducted to implement the City's April 1, 2011, *Stormwater Management Plan* (SWMP) during the 20th fiscal year (July 1, 2014 through June 30, 2015) of the permit program.

The SWMP does not include monitoring BMPs; rather, the City has a separate monitoring plan, as required by the permit. The monitoring compliance report is provided separately in Section IV of this *Annual Compliance Report*.

PROGRAM ORGANIZATION AND COORDINATION

Program Authorization

The Portland City Council passed a resolution supporting the NPDES MS4 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.

Legal Authority

The City of Portland continues to maintain and update legal authority to implement the programs outlined in the SWMP, as initially demonstrated in Part 1 of the City's original 1991 NPDES MS4 permit application.

City Management and Coordination

BES's Stormwater Program Manager is responsible for overall project management, compliance reporting, policy development, and coordination within the City of Portland, as well as for co-permittee coordination. BES staff members serve as leads for the BMPs contained in the SWMP. Because the permit is citywide, many City staff members outside BES are also involved with stormwater program development, implementation, and reporting.

ADAPTIVE MANAGEMENT

The City submitted its adaptive management approach to DEQ on November 1, 2011. The City's approach includes two elements:

- An **annual process** to determine if the City's stormwater program is being implemented in accordance with the SWMP; determine if measurable goals are being met or progress is being made toward them (as applicable); and identify whether any program adjustments are needed.

- A more comprehensive process to identify proposed program modifications submitted as part of the City's **permit renewal** package, including the modification, addition, or removal of best management practices (BMPs) incorporated into the SWMP and associated measurable goals.

The City provided its *Permit Renewal Submittal* to DEQ on July 31, 2015. Section III of the submittal includes a description of the adaptive management process that was conducted to assess the existing MS4 program and develop a proposed SWMP for the next permit term.

PERMIT-REQUIRED ACTIONS

The 2011 permit identifies activities that must be implemented by specified dates. The City completed the following activities in FY14-15 to meet these requirements:

- In accordance with Schedule B.6 of the permit, the City provided its *Permit Renewal Submittal* to DEQ on July 31, 2015.
- In accordance with Schedule D.3.d of the permit, the City included updated TMDL pollution reduction benchmarks as part of its Permit Renewal Submittal.

URBAN GROWTH BOUNDARY EXPANSION AREAS

There were no expansions to the urban growth boundary in FY14-15.

CITY BUDGET AND FUNDING

The City of Portland has invested more than $1.224 billion in stormwater management services and facilities during permit years 1 through 20. The revenue requirements for permit year 20 totaled approximately $108.3 million, allocated as follows:

Major Program Category	Requirements	Percentage Share
Enforcement and Development Review	$ 13.4 million	12%
Watershed Program & Habitat Restoration	13.9 million	13%
Facilities Operations and Maintenance	21.5 million	20%
Capital Improvements*	59.5 million	55%
Total Revenue Requirements	**$ 108.3 million**	
* Includes debt service, facilities planning and engineering, construction engineering, and construction contracts.		

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

In permit year 21, the City plans to invest $118.4 million in stormwater management services and facilities. Direct monthly user fees will pay for 86 percent of these investments.

Stormwater Management Charges

City Council approves revised stormwater monthly user fees and stormwater system development charges (SDCs) at the start of each fiscal year. Monthly user fees are adjusted to reflect operating, maintenance, and capital costs of the City's sanitary sewer and drainage

system. The rate adjustments are based upon cost of service principles, ensuring equity by charging ratepayers according to the amount of sewer and drainage service they use.

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

	2010-2011	**2011-2012**	**2012-2013**	**2013-2014**	**2014-2015**
Single-Family Residential Charge	$21.79	$22.36	$23.90	$24.88	$25.72
Residential rate per 1,000 square feet of impervious area	$9.08	$9.32	$9.96	$10.36	$10.72
Non-residential rate per 1,000 square feet of impervious area	$9.66	$9.97	$10.55	$10.97	$11.19

At the close of permit year 20 (FY 2014-15), City Council increased the monthly stormwater management charge for single-family residences from $25.72 to $26.59. The residential rate increased from $10.72 to $11.08 per 1,000 square feet of impervious surface per month, and the commercial rate increased from $11.19 to $11.55 per 1,000 square feet of impervious area per month.

Stormwater System Development Charges

The methodology for assessing system development charges (SDCs) for new development and significant redevelopment includes two components. One component represents the charge for stormwater facilities that handle runoff from individual properties. For permit year 20, this onsite portion was assessed based on $176.00 per 1,000 square feet of impervious area. Riparian properties that drain directly to the Columbia Slough, Columbia River, or Willamette River are exempt from this portion of the SDC. The other portion represents the cost of stormwater facilities that handle runoff from public rights-of-way. This portion was assessed based on the use of the transportation system, using road frontage and vehicle trips to allocate the costs. For permit year 20, the rates were $5.66 per linear foot and $3.04 per vehicle trip. At the end of permit year 20, City Council increased the rates for stormwater system development charges to $183.00 per 1,000 square feet of impervious area, $5.84 per linear foot of frontage, and $3.12 per daily vehicle trip.

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

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY 14-15)

Clean Rivers Education Programs

- Reached 5,168 students (grades K-12+) with 220 classroom programs that provide hands-on, interactive science education about stormwater and other environmental issues.

Columbia Slough:	1,134
Fanno/Tryon Creek:	428
Johnson Creek:	111
Willamette River:	3,495
Total:	**5,168**

- Involved 3,727 students (K-12) in 165 education field programs that offer watershed investigations and field assessments, stormwater tours, boat tours, and restoration experiences. Of these, 1,528 students in 71 classes combined education with natural area restoration service projects. (Note: the numbers below reflect the watershed where the field trip took place, not the location of the participating school.)

Columbia Slough:	12,008
Fanno/Tryon Creek:	188
Johnson Creek:	496
Willamette River:	1,035
Total:	**3,727**

- Provided canoe trips to 385 students in the Columbia Slough watershed. These trips were preceded by classroom studies and stewardship projects related to stormwater pollution.

- Checked out stormwater and watershed curriculum kits and field equipment to five Portland elementary and middle school teachers.

- Presented Stormwater - Soak It Up, a 75-minute classroom program for 12 classes in grades 4-12 and special interest groups, totaling 306 students and teachers.

Columbia Slough	185
Willamette River:	121
Total:	**306**

- Presented Tours of Stormwater Solutions to 292 students. Students visited swales, stormwater planters, ecoroofs, porous pavement, and creative downspout disconnections.

- Presented Watershed Awareness to 474 students in 22 classes, grades 3-6. This program focuses on common non-point sources of pollution and pollution prevention.

Johnson Creek:	61
Willamette River:	413
Total:	**474**

- Continued the permanent storm drain curb marker program. Participating community and school volunteers also distributed doorhangers with stormwater pollution prevention messages and clean river tips to nearby residences. Number of participants: 20

- Targeted schools with onsite stormwater facilities for extended outreach. Students learned about stormwater pollution prevention and their school's sustainable stormwater facilities and participated in maintenance activities for their facilities. Number of students: 48

- Presented *Futures Working for Clean Rivers* career education classroom and field programs to 65 students in the Columbia Slough watershed.

Community Stewardship Grants Program

- BES's Community Watershed Stewardship Program awarded 13 stewardship grants in FY 14-15, totaling $95,000 and engaging 2,976 volunteers who contributed 9,305 hours.

Willamette River Watershed	
Linnton Neighborhood Association Hoge Creek Project	$4,975
Russian Speaking Network of Oregon Naturescaping for Better Environment	5,580
Depave /Faith Community Church Parking Lot Stormwater Retrofit	9,875
Micro-Enterprise Services of Oregon MLK Rain Garden Phase II	6,000
Columbia Slough Watershed	
Verde Cully Residential Rain Gardens	9,825
Native American Youth and Family Center (NAYA) Illahee Gardens	4,700
Holy Redeemer School Stormwater Management	8,000
Trinity Full Gospel Pentecostal Church Rain Garden	6,000
Johnson Creek Watershed	
Friends of Malden Court Community Orchard	9,995
Green Lents Johnson Creek Clean-Up	4,500
Fanno Creek and Tryon Creek Watersheds	
SOLVE Trillium Creek Restoration Project	9,550
Tryon Creek Watershed Council Restoration Mentors	8,000
Multiple Watersheds	
Momentum Alliance Environmental Camp and Restoration Project	8,000
Total	**$95,000**

The Community Watershed Stewardship Program also awarded 11 mini grants, totaling $3,700, for native plants to help start or maintain projects beneficial to Portland watersheds, including stormwater management.

Watershed-specific Education and Stewardship Activities

Columbia Slough Watershed

- Co-sponsored and participated in numerous community events, including Slough 101, Groundwater 101, Explorando El Columbia Slough, three Canoe the Slough events, the Columbia Slough Regatta, Aquifer Adventure, the Columbia Slough Corps of Rediscovery, Soup on the Slough event, one Great Blue Heron Week Event, and three Sunday Parkways events, where stormwater was a topic of instruction. The City was a co-sponsor of the Columbia Slough Watershed Awards program. The total participation was approximately 2,300 persons.

- Participated in Friends of Force Lake, Friends of Smith and Bybee Lakes, Let's Build Cully Park Committee, Columbia Biogas Community Advisory Committee, and Colwood Golf Course Acquisition community advisory groups, providing stormwater, watershed, surface water, and pollution prevention education and professional guidance.

Willamette Watershed

- Conducted public involvement and information activities for Willamette watershed projects via presentations to neighborhood associations, newsletter articles, an annual open house, and an annual street fair. Participated in over 32 community events, reaching over 1,500 citizens, including Multnomah Days, Sunday Parkways, rain garden workshops with East Multnomah Soil & Water Conservation District, neighborhood association meetings, and The Art of Stormwater exhibitions.

- Distributed over 30 copies of "Be a Partner for Watershed Health" brochure through citywide mailings and community events.

- Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas, where 8,938 volunteers spent 27,780 volunteer hours on restoration activities. The Youth Conservation Corps spend 860 hours working in Willamette Watershed parks.

- Hosted citizens at the SW Watershed Resource Center (WRC); provided technical assistance and project support to neighborhood and Friends groups in the SW Willamette River watersheds.

- Partnered with SOLV and the Friends of Baltimore Woods to engage community volunteers in watershed restoration at Baltimore Woods in North Portland. Over 696 volunteers provided erosion reduction, invasive plant removal, and native tree and shrub planting.

- In partnership with Portland Parks and the Mt. Tabor Park Weed Warriors, community volunteers spent 2,480 volunteer hours at 17 events to enhance over 7 acres of parkland..

Johnson Creek Watershed

- Continued working with the Johnson Creek Watershed Council and streamside property owners to encourage watershed stewardship.

- Through the Johnson Creek Watershed Interjurisdictional Committee, continued to work with multiple agencies and jurisdictions throughout the Johnson Creek Watershed to conduct watershed-wide monitoring, including water quality and macroinvertebrates.

- Supported the Johnson Creek Watershed Council's 17th annual Johnson Creek Watershed-wide Restoration Event, where 415 volunteers participated in watershed improvement activities.

- Provided grant funding to support the Johnson Creek Watershed Council's Annual Creek Cleanup, which involved 150 volunteers.

- Continued to support the Johnson Creek Watershed Council and the Crystal Springs Partnership in their efforts to remove invasive species and improve conditions along Crystal Springs, a tributary to Johnson Creek.

- Worked with community partners, including the Crystal Springs Partnership, Native Americans, TriMet, the Army Corps of Engineers, and Portland Parks & Recreation, to celebrate completion of the Westmoreland Park restoration project. Shared information about the project and the arrival of native salmon that spawned in Crystal Springs via blog posts, Facebook, and local media.

- Hosted a major public event at the Foster Floodplain Natural Area in May 2015, with about 3,000 people attending. Provided information about City efforts to improve water quality, mitigate flooding and enhance wildlife habitat at the site, as well as information about native wildlife, water quality issues in urban watersheds, tree planting and community greening efforts.

- Supported environmentally friendly farming and wetland education programs at Zenger Farm, which is the site of a renovated farmhouse with a zero net energy design and sustainable stormwater features. Supported the completion of their Urban Grange, which will include an ecoroof and stormwater planters. In 2014, Over 8,700 students and adults visited the farm, with more than 43 percent being repeat visitors. About 330 youth participated in the summer camps. Adult education classes were conducted in sustainable/environmental farming practices. About 290 volunteers contributed more than 8,500 hours of service to the farm.

Fanno and Tryon Creek Watersheds

- Conducted public involvement and information activities for Fanno and Tryon Creek watershed projects via direct mail, presentations to neighborhood associations and coalition committees, newsletter articles, an advisory committee, an annual open house, and an annual street fair. Projects included SW Boones Ferry Road culvert replacement, Beaverton Hillsdale Highway stormwater retrofits, South Ash Creek sewer repair and enhancement, SW Stevenson and Hamilton roadside swales, SW 45th at Fanno Creek culvert replacement project, and stream daylighting projects at Albert Kelly Park and Jackson Middle School.

- Worked with Southwest Neighborhoods Inc. (SWNI) to provide public information about watershed improvement and pollution prevention work conducted by the City and partner organizations. In FY 14-15, SWNI hosted a watershed open house and published monthly articles in its newsletter, which is distributed to over 9,000 homes and is available on-line.

- Responded to over 25 citizen concerns relating to stormwater issues, invasive plants, project ideas, wildlife issues, pollution or dumping concerns, and requests for stewardship and involvement.

- Sponsored the Tryon Creek Watershed Council's Volunteer Program to support an Americorps Volunteer Coordinator.

- Sponsored the Friends of Tryon Creek State Park in the removal of approximately 4,000 square feet of invasive species and the support of field trip scholarships for 100 students.

- Hosted citizens at the SW Watershed Resource Center (WRC), located in the Southwest Neighborhoods, Inc. office at Multnomah Arts Center. Provided technical assistance and project support to neighborhood and Friends groups in the Willamette River and Fanno and Tryon Creek watersheds. Activities included:
  - Hosting of visitors in the WRC room, open during regular business hours
  - 37 stewardship events, where 696 attendees contributed over 1,682 hours
  - 11 presentations and outreach events, with 411 total attendees
  - 44 landowner inquiries, with 18 onsite consultations
  - 38 restoration tool and equipment checkouts

- Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas. In the Fanno Creek Watershed, 503 volunteers spent 1,271 volunteer hours at 29 restoration events, and the Youth Conservation Corps spent 204 hours working in Fanno Creek parks. In the Tryon Creek Watershed, 209 volunteers spent 554 volunteer hours at 11 restoration events, and the Youth Conservation Corps spent 3 hours working in Tryon Creek Watershed parks.

- Worked with the Tualatin Basin Public Awareness Committee (TB-PAC), a partnership of agencies and non-profits working to educate and involve Tualatin Basin residents. Partners sponsored $5,462 in activities, including $1,000 from BES. Activities included:

- Two Naturescaping for Clean Rivers workshops, with 36 attendees
- Five Clean Tualatin Assembly shows with Will Hornyak reaching 1,600 students.
- Bus funding for watershed field trips

Citywide

- BES's Tree Program conducted the following activities:

  - Provided staff support and resources through a contract with Friends of Trees (FOT) to foster recruitment, retention, and education of volunteers, with the purpose of maximizing tree planting, community involvement, and long-term survival of FOT-planted trees.

  - Provided support for outreach and educational programming through a partnership with Portland Parks Urban Forestry to foster a more tree-literate populace, with the purpose of maximizing urban forest education and outreach, community involvement and awareness, and long-term stewardship of the urban forest.

  - Provided information at community events to educate Portlanders about the importance of urban trees for clean rivers, healthy watersheds, and livable, sustainable communities; reached 611 people at 12 events.

Stormwater-related Information

- Mailed Riverviews newsletter to over 309,000 residential ratepayer properties. The focus of the newsletter was BES's new Watershed Report Cards, which help BES evaluate the effect of its work on the watersheds and identify work still needed.

- Included inserts in City water/sewer bills mailed to more than 200,000 ratepayer properties:
  - First quarter: "Portland Has Changed a Lot since the 1930s" provided information about the city's aging sewer system and current projects to replace older sewers in danger of failing.
  - Second Quarter: "Finding Green Solutions" provided information about green infrastructure and BES's stormwater discount program (Clean River Rewards).
  - Third Quarter: "Living in a Floodplain" provided information about resources for residents living in a floodplain.
  - Fourth Quarter: "Working for Clean Rivers" provided information about what residents can do at home to protect water quality, including not using garden chemicals and reporting spills.

- Updated and posted fact sheets, brochures, and educational materials on the BES website about sustainable stormwater management (163,250 page views); Treebate incentive for planting yard trees (17,991 page views); Green Street Stewards Program (35,565 page views); Native Plant Resources (7,783 page views); and Brownfield Program (36,614 page views).

- Maintained the City Green blog and Facebook page to highlight BES's green infrastructure work and the work of partner organizations, including watershed councils, Friends of Trees,

stewardship groups, soil and water conservation districts, and local governments. In FY 14-15, posted 96 articles and received over 565,000 hits.

- The Green Street Steward Program continued to educate and recruit volunteer Green Street Stewards. In FY14-15, the program reached over 1,585 individuals through tabling events and trainings. Twenty-two people volunteered to become Green Street Stewards and adopt 63 Green Street facilities.

- Developed and distributed a variety of educational materials at community meetings and events.

MEASURABLE GOALS [1]

Measurable Goal	Status as of 6/30/2015
Provide outreach to approximately 15,500 K-12 students annually (classroom programs, education field programs).	Provided outreach to approximately 19,500 students.
Award at least $50,000 in community stewardship grants annually.	Awarded 13 stewardship grants totaling $95,000 in FY14-15.
Involve approximately 10,000 participants in community events, workshops, stewardship projects, and restoration events annually.	Involved over 24,000 participants citywide.
By May 2011, develop and distribute a public education bill insert to over 200,000 water and sewer customers.	Completed (as reported in Annual Compliance Report No. 16). Inserts were also distributed in all ensuing years, as reported in annual reports.

[1] As defined in the MS4 permit, measurable goals are BMP objectives or targets used to identify progress of SWMP implementation.

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY 14-15)

- Made debris screen/inlet inspection/maintenance visits to 350 locations citywide (multiple visits to some locations after major rain events).

- Inspected all public stormwater management facilities (SMFs) at least once during the year. These include:
  - 152 proprietary BMPs (StormFilter, Vortechnics, Stormceptor, etc.)
  - 248 surface SMFs (swales, wetlands, ponds, sand filters, etc.)
  - 1,783 Green Streets

- Cleaned:
  - 77 SMFs
  - Approximately 14,157 catch basins and inlets
  - Approximately 32,901 lineal feet of ditch and 32,051 lineal feet of culvert

- Repaired 9 SMFs.

- Repaired or constructed 216 inlets and inlet leads and 684 lineal feet of culvert.

- Continued to incorporate newly constructed stormwater system components into the City's inspection and maintenance database (Hansen), as well as maintenance information about existing components.

- PBOT-MO continued to pilot new materials and applications to protect water quality.

- Completed a training handbook PBOT-MO staff that includes guidance for maintenance procedural steps, preferred seasonality of work, and materials management.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Develop a training handbook for PBOT-MO staff during the permit term.	Completed.
Provide the following maintenance actions over the five-year permit cycle: – Clean 31,000 lineal feet of culverts. – Repair 10,000 lineal feet of culverts. – Clean 250,000 lineal feet of ditches. – Clean 38,000 inlets and catch basins. – Repair 1,500 inlets and inlet leads. – Clean 135 major stormwater management facilities/pollution reduction facilities. – Repair 40 pollution reduction facilities.	Maintenance actions completed in FY14-15: – Cleaned 32,051 lineal feet of culverts. [122,656 lineal feet]* – Repaired 684 lineal feet of culverts. [10,244 lineal feet] – Cleaned 32,901 lineal feet of ditches. [269,795 lineal feet] – Cleaned 14,157 inlets and catch basins. [65,453 inlets and catch basins] – Repaired 216 inlets and inlet leads. [1,117 inlets and inlet leads] – Cleaned 77 major stormwater management facilities/pollution reduction facilities. [602 facilities] – Repaired 9 pollution reduction facilities. [57 facilities] * Bracketed numbers show cumulative total to date during this permit term.

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY 14-15)

- Continued to implement BMPs within the right-of-way to protect water quality, including:
  - Following ODOT's *Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices.*
  - Using the trenchless liner repair system.
  - Using bio-pillows for sediment control on impervious surfaces to trap sediment during all sediment-disturbing activities.
  - Using low-disturbance sign installation methods to avoid or minimize digging.
  - Using mild cleaners, with no solvents, to clean signs.
  - Monitoring weather conditions during asphalt grinding.
  - Hand-applying asphalt where necessary to prevent these materials from entering the storm drain system.
  - Using rubberized mats on inlets to prevent fog seal material from entering the system.
  - Using water-based asphalt emulsions and biodegradable asphalt release agents.

- Continued to pilot test alternative methods, products, and practices to reduce pollutant discharges to the MS4.

- All licensed pesticide applicators at PBOT Maintenance Operations must receive 40 hours of training over their five-year licensing period. PBOT-MO has a total of four certified applicators that have met all of their training requirements.

- Completed a training handbook PBOT-MO staff that includes guidance for maintenance procedural steps, preferred seasonality of work, and materials management.

- The Bureau of Transportation continues to implement a leaf removal program in 30 leaf service areas (areas that have streets lined with large, mature trees). Under the program, PBOT schedules and implements one or two leaf collection days per zone.

- Swept major arterials four to six times during the year.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Sweep arterials six times/year.	Swept arterial four to six times/year.
Develop a training handbook for PBOT-MO staff during the permit term.	Completed

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY14-15)

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

- Continued to inventory discharges at various Water Bureau facilities. The Water Bureau has developed a Basis of Design Report that identifies facilities that need discharge piping modification, site work, and improvements in order to have zero to acceptable impact to the MS4. The goal is to implement these modifications and improvements as necessary when planning future tank or reservoir draining and cleaning. As a result of the report, the Water Bureau purchased a filter pack and portable storage tank for use in remote locations and sensitive areas to reduce suspended solids prior to discharge.

- The City engages in green purchasing best practices in order to spend public funds on goods and services that minimize negative impacts on human health and the environment. In FY14-15, Procurement Services continued to support City bureaus in including environmentally preferable product and service specifications in City solicitations and resulting contracts. Examples of solicitations where stormwater pollution prevention was specifically addressed include construction services and architectural/engineering design services. These specifications ensure that contracted services reflect City policies and best practices for pollution prevention and that less-toxic, environmentally preferable products are available through City contracts.

- Continued to control discharges from non-emergency fire-fighting training by routing the discharges to the sanitary sewer system.

- Continued to research projects to reduce stormwater runoff from PBOT-MO yards, including diverting stormwater runoff from an employee parking lot (almost two acres) to vegetated planters, collecting and treating rainwater off the roof of a building at Albina Yard, and creating an ecoroof on the Kerby Building.

- Continued to investigate a PBOT-MO recycling facility for sweeper debris.

- Pollution Prevention (P2) teams from PBOT and BES met as needed to evaluate and track maintenance procedures, pilot test new products and techniques, evaluate work processes, and monitor developments in related fields. Topics relevant to stormwater quality protection included:

- Water quality protection needs associated with vehicle and equipment washing.
- Evaluation of spill kit usage and appropriate absorbents.
- Management of vehicle and equipment leaks in maintenance yards and parking lots.
- Spill reporting requirements.
- Ecoroofs

- Monitored the continued use of approved vehicle wash facilities at Albina Yard.

- Inspected, and cleaned as necessary, all stormwater and water quality facilities in maintenance yards and lots. Continued to implement Phase I stormwater controls, which encompasses installation, inspection, and maintenance of filtration and absorbent media at selected stormwater inlets. Specific activities include:
  - Maintain the stormwater collection system in equipment parking areas and other selected inlets vulnerable to leaks and spills.
  - Store most collection bins for recycled materials indoors under cover.
  - Clean out subsurface vaults below the sweeper debris pile approximately two times per year.
  - Clean out debris from sweeper wash facility vaults as needed.
  - Clean debris vaults at the truck bed washout facility as needed.

- Continued to empty (monthly) the sump at Mt. Tabor Yard that captures the grass and dirt of Parks mowers when they clean off at the end of shift, helping to prevent that material from entering the storm system.

- Continued to comply with practices required for Salmon Safe certification, including Integrated Pest Management, reducing water and fertilizer inputs on park properties, restoring riparian and upland habitats, and using alternatives to pesticides.

- Continued program with vendors to provide pesticides at individual golf course sites on an as-needed basis to reduce pesticide storage.

- Continued testing nutrient levels and the presence of pesticides in surface waters for all City golf courses. Results from testing continue to show that pest management and fertilization activities are not negatively impacting water quality.

- Continued the use of a specially formulated slow-release fertilizer on park turf, which possesses an ideal formulation of components that reduces leaching and waste elements in runoff. Water quality testing results confirm the efficacy of this formulation.

- Continued the standard use of special equipment for precise application amounts, timing, and distribution of fertilizer on all five City golf course fairways and greens.

- Maintained pesticide-free parks management at three parks.

- Held five work parties for volunteers at the Arbor Lodge pesticides-free park.

- Continued a public/private partnership to fund new practices at key park sites to renovate athletic fields. These practices include aeration and overseeding to reduce fertilizer use and increase water infiltration.

- Continued to perform aeration, topdress, and overseed activities on 28 highly used sports fields at 20 different sites to achieve structural soil changes that improve plant health and optimize use of water and fertilizers.

- Continued to implement activities to reduce water usage on park sites.

- Conducted a bureau-wide consultation with each Portland Parks & Recreation service zone to address challenges and assess adherence to park standards.

- Continued to use Mt. Tabor Yard as a Parks Bureau's recycling collection point for used oil, used antifreeze, waste paper, scrap metal, dry cell batteries, and fluorescent lamps.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Inspect, and maintain as necessary, all stormwater and stormwater containment and pollution prevention facilities in City maintenance yards annually.	Completed.

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY 14-15)

- Administered NPDES industrial stormwater discharge permits for 130 facilities (and associated tenants) that discharge stormwater to the MS4. One of these permits was terminated midway through the fiscal year. Continued to perform annual compliance inspections and additional inspections, if warranted, to provide technical assistance or assess BMP implementation.

- Under an intergovernmental agreement with DEQ, administered 87 additional permits for facilities not discharging to the MS4. Five of these were terminated midway through the fiscal year. Most are permits for direct dischargers, although some facilities discharge to the Port of Portland or ODOT's system or Multnomah County Drainage District managed waters.

- Continued to perform inspections and evaluate the need for stormwater permits for non-permitted industries (both those that do and do not discharge to the MS4). Performed 308 inspections of permitted and non-permitted facilities during permit year 20. Identified BMPs at these industries to minimize or remove exposure of industrial activities to stormwater. Required 3 facilities to apply for a stormwater permit.

- Collected and analyzed one sample from a non-permitted facility for investigative and compliance purposes.

- Continued to locate and map non-City outfalls (industrial and business) located in the riparian area that discharge directly to receiving streams and to identify the sources that drain to these outfalls.

- Continued to re-inspect industries that were previously identified as having no exposure and were not required to apply for a permit. Of the 50 industries that had a No Exposure Certification (NEC) expiring in FY 14-15, 12 were either no longer in operation or had ceased discharging stormwater. Stormwater from four sites was directed to the combined sewer as part of the City's combined sewer overflow program; and three sites are pending permit coverage due to increased exposure. The City re-issued NECs to 31 facilities and processed new NECs for another 6 facilities.

- Continued to survey newly identified industrial facilities to determine the need for NPDES permits. Issued permits and no exposure certifications where applicable.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Inspect all permitted (1200Z, 1200COLS) facilities once per year.	Inspected all of the 129 facilities that discharge stormwater to the MS4 and have active industrial stormwater permits.
Review each permitted facility's monitoring and annual report each year.	Completed.
Survey 100 percent of newly identified facilities to determine the need for NPDES permits.	Completed.
Every 5 years, inspect industries (individual sites) previously identified as having no exposure and not required to obtain a permit.	Completed
Complete revision of City Code Title 17.39 by 2012.	Completed. City Council adopted code revisions in September 2011.

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY14-15)

- Over 20 BMP fact sheets are posted on BES's Industrial Stormwater Program website, which provides technical assistance information to the public, targeting commercial and industrial site operators. During FY 14-15, the most-viewed BMP materials related to sand-blasting and painting operations (approximately 700 views), catch basin maintenance (approximately 600 views), and preparing emergency response and spill cleanup plans (approximately 215 views). Other BMP materials include information on dewatering activities, loading and unloading materials, and outside container storage and waste disposal.

- Continued to work with the Regional Pollution Prevention Outreach Team (P2O Team), Automotive Eco-Logical Advisory Subcommittee, and Landscape Eco-Logical Advisory Subcommittee for the Portland metropolitan region to certify businesses under the Eco-Logical Business Program (EcoBiz). Program activities in Portland in FY 2014-15 included:

  - Re-certified three landscape service businesses.

  - Recertified nine automotive maintenance and auto body repair shops.

  - Completed the BMP manual and certification checklist for the stormwater facility maintenance sector. Continued revision of the Automotive Program checklist.

  - Made a presentation at the Portland chapter of the Oregon Landscape Contractor Association (OLCA), staffed information booth at the annual OLCA conference and attended monthly OLCA - Portland Chapter meetings.

  - Organized two sustainability-focused events for auto shop owners, called "Keep Your Shop in Tune."

  - Staffed information booth at the Green Neighborhoods Festival at Peninsula Park.

  - Continued to participate in local environmental events, including the annual sustainability fair and the Green Neighborhoods Festival at Peninsula Park to promote the use of certified businesses.

  - Worked with students attending Portland State University and their Community Environmental Services program to conduct outreach and technical assistance to 40 auto shops in East and Northeast Portland. Outreach was coordinated with Neighborhood Prosperity Initiative (NPI) organizations, including Division Midway Alliance, The Rosewood Initiative, and Historic Parkrose.

- Sustainability at Work (formerly the BEST Business Center) continued to assist Portland businesses with resources and information to help them green their operations. The program is run by the City of Portland in partnership with Metro, Pacific Power, and the Energy Trust of Oregon. The program conducted the following activities in FY14-15:

  - Conducted site visits at 268 businesses, providing assistance across a broad range of topics, including water conservation, stormwater management, hazardous waste, energy efficiency, renewable power, alternative transportation, and waste prevention. Assisted an additional 648 businesses on these topics by phone and email.

  - Distributed an e-newsletter twice monthly to 4,000 Sustainability at Work customers, providing tips, case studies, and best practices in the above-mentioned topic areas.

  - Collaborated with Sustainable Business Oregon to implement the statewide Innovation in Sustainability Awards, which recognize Portland's most sustainable businesses. Fifteen awards were presented.

  - Administered Sustainability at Work Certification, recognizing businesses that have taken measurable steps to conserve resources and reduce their greenhouse gas emissions. To date, 223 businesses have been certified.

- Completed the 12th year of providing education and outreach to affected residents and businesses and one-on-one technical assistance to businesses to help them comply with requirements of the Columbia South Shore Well Field Wellhead Protection Program. Program requirements include structural and operational BMPs to reduce the occurrence of spills and minimize spill impacts. Technical assistance and outreach by the Portland Water Bureau, Columbia Corridor Association (CCA), and Columbia Slough Watershed Council during permit year 20 included:

  - Made 3,134 individual outreach contacts
  - Provided technical assistance to 35 businesses.
  - Published newsletter articles on the protection program.
  - Distributed free spill kits, required signs, secondary containment pallets, and stormdrain covers.
  - Maintained the CCA and PortlandOnline webpages on the Groundwater Protection Program and requirements.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Under the Eco-Logical Business Program, certify 10 additional auto shops and 20 additional landscape firms that provide services within the City Portland by 2015.	15 landscape firms have been newly certified to date during this permit term. 4 auto shops have been newly certified to date during this permit term.
Evaluate one new business sector for implementation of the Eco-Logical Business Program.	Expanded the program into the car washing sector in FY10-11 (as reported in *Annual Compliance Report No. 16*).

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY14-15)

- BES's Illicit Discharges Detection and Elimination Program (IDDE) conducted 136 dry-weather inspections of 110 City-owned outfalls.

- BES finalized the 2014 *Illicit Discharge Detection and Elimination (IDDE) Procedures*, which will be reviewed annually and updated to maintain current information.

- The Regional Spill Response Committee continued its coordination meetings during permit year 20. The committee includes representatives from the Oregon Department of Environmental Quality (DEQ), Water Environment Services (WES), Port of Portland, City of Gresham, City of Portland Water Bureau and Fire Bureau, and BES. BES chairs and attends all meetings.

- Continued to operate the BES Spill Response Hotline. Activities in FY 14-15 included:
  - Received and responded to approximately 1,500 daytime calls (citywide) regarding pollution complaints, spills, sanitary sewer overflows, and dye tests.
  - Received and responded to 565 after-hours complaint calls (citywide).
  - Received approximately 1,500 additional daytime information-only calls (citywide) and responded by providing agency referrals, industrial information, technical assistance, and regulatory information.
  - Received no Fire Bureau requests to respond to fire event sites.

- BES's Spill Protection and Citizen Response Section continued to respond to pollution complaints and issue enforcement actions for violations of City Code 17.39. During FY 14-15, four enforcement actions were issued, with proposed penalties totaling $9,850.

- BES continued a communication protocol with the Portland Fire Bureau. The Fire Bureau contacts the BES duty officer to report events or possible impacts to street catch basins. Upon receiving the call or page, the duty officer contacts the Fire Bureau to identify if the duty officer is needed by the fire responders.

- BES continued communication with the Portland Bureau of Transportation (PBOT) tow contact person concerning the ongoing requirement to have companies on the City's towing contract completely clean vehicle debris from tow sites.

- Conducted quarterly training for duty officer staff on the BES spill response hotline, sanitary sewer overflows (SSO) reporting, and MS4 response manual procedures.

- BES and the Water Bureau continue to implement Columbia South Shore Well Field (CSSW) Protection Area signage. The signs list the BES spill response hotline number and read: "TO REPORT SPILLS CALL (503) 823-7180."

- BES's Industrial Stormwater Program administered 217 general NPDES stormwater discharge permits with requirements to maintain spill prevention and response procedures. The program evaluates permit compliance of industrial facilities to ensure that best management practices relating to spill prevention and reporting are properly implemented.

- The Industrial Stormwater Program continued to address illicit discharges and connections as they were identified during stormwater inspections and as referred by other parties. During FY 14-15, two illicit discharges were identified and subsequently corrected and/or mitigated. Follow-up and/or enforcement letters were issued to responsible parties as appropriate, and penalties totaling $800 were assessed. The program continues to address prohibited discharges and other non-stormwater discharges to the storm sewer system. Policies and appropriate control measures, if needed, are developed and implemented.

- To help prevent illegal dumping, continued to implement curbside collection services (residential garbage, recycling, yard debris and food scrap collection). Continued the City's partnership with Neighborhood Coalition Offices and Metro to administer community collection events; on average, about 50 events take place throughout the City.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Conduct dry weather sampling at all major City-owned outfalls at least once annually.	Completed.
Inspect the priority outfalls a minimum of three times a year.	Completed.
Expand the IDDE (formerly IDEP) program to include the CSO system below diversion structures, where the outfalls discharge stormwater only and should have no dry-weather flows. Currently, the program addresses all of the westside outfalls and 25 percent of the eastside outfalls. Expand the program to all eastside outfalls by December 2013.	Completed.
Maintain the spill response hotline 24 hours a day.	Completed.

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY 14-15)

- There were 4,557 active private construction permits subject to erosion control inspection (citywide). The Bureau of Development Services (BDS) conducted 4,775 erosion control-related inspections of private construction sites (citywide). (Even though a permit is active, there may be times when no activities that require erosion control inspection are occurring.) This number includes only approved inspections.

- All private development sites with qualifying ground disturbance areas were inspected for temporary and permanent erosion control measures at the beginning and near or at completion of the project. At interim checks conducted during the course of regular building inspections, the inspector notes any identified erosion control deficiencies, and the site operator is required to implement corrective action.

- There were 993 active public construction projects (citywide) with erosion control components. In general, public sites are inspected daily during construction.

- Continued the pre-permit-issuance site meeting program, where the applicant's team can choose to meet with staff onsite to discuss erosion control and other sensitive site issues. No applicants requested a pre-permit-issuance site visit this fiscal year.

- Provided annual construction inspector training to BES and BDS staff.

- Tracked erosion control complaints (received through the complaint hotline or staff referrals) through the City's building permit tracking program, TRACS. A total of 17 cases were opened and responded to, with 13 cases closed (citywide).

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Evaluate the *Erosion and Sediment Control Manual* and update as needed (at least once during the 2011-2016 permit cycle); conduct public involvement on updates.	Evaluated and determined that no update is necessary.
Inspect public sites with erosion control permits daily during construction.	Completed.
Inspect 100 percent of active private development construction sites subject to erosion control requirements. At a minimum, inspections will occur (1) after initial temporary erosion control measures are installed, and (2) near completion of development after permanent erosion control measures are in place. Conduct interim checks as part of routine building permit inspections.	All private development sites with qualifying ground disturbance areas are inspected for temporary and permanent erosion control measures at the beginning and near or at completion of the project. Interim checks are conducted during the course of regular building inspections.

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY14-15)

- Continued review of Chapter 4 of the SWMM to identify potential source control requirement updates.

- Continued to implement the 2008 and 2014 SWMMs:
  - Conducted 559 land use reviews to determine compliance with SWMM requirements.
  - Responded to 318 early assistance requests, including pre-application conferences.
  - Approved permits for approximately 28 public works projects and reviewed approximately 3,625 private building permits for projects subject to SWMM requirements.
  - O&M agreements were recorded for 463 new private stormwater management facilities on 197 private properties (tax lots).

- Provided training and technical assistance on the new SWMM to City staff and the development community. Continued to contribute to regional materials and presentations on stormwater maintenance.

- Conducted 450 land use reviews and early assistance meetings for source control measures at sites subject to SWMM requirements. Approved permits for approximately 1,391 source control measures at sites with high-risk characteristics or activities.

- Redevelopment and new development projects during the fiscal year resulted in a total of approximately 140.3 acres of replaced impervious area and 170 acres of new impervious area. Because these new and redeveloped areas maximize infiltration and reduce pollution, Portland's net effective impervious area and pollutant loading continue to decrease.

- Inspected 1,129 private stormwater management facilities to ensure construction was consistent with development permit requirements.

- Conducted the following monitoring and evaluation activities:

  - Continued stormwater monitoring of green streets (both infiltration and flow-through (lined) facilities) and ecoroofs. The evaluated facilities are located throughout the City and represent a variety of facility types, configurations, ages, and land uses. The monitoring report covering data through the end of 2012 will be published in 2015.

  - Continued trials of different mulches to determine which provide the best performance in Green Streets facilities and which can be incorporated into general maintenance practices.

  - Tested the installation of less imported soil media in green streets facilities as means for improving plant health.

- Tested the amendment of native soils as an alternative to importing soil media in vegetated stormwater facilities

- Tested modifications to the drain system in a stormwater planter for improved performance.

- Continued to field-test soil blends with slightly more fines to improve water retention and plant health in vegetated stormwater management facilities, and improve lined facility performance.

- Bench-tested the value of biochar and other soil additives to improve water retention and water quality performance.

- The Maintenance Inspection Program (MIP) ensures that property owners follow site-specific, BES-approved operation and maintenance (O&M) agreements. The program also collects information on stormwater management facility deficiencies and corrective actions taken to address deficiencies. MIP activities in FY 14-15 included:

  - Inspected 645 properties (tax lots) with 1,340 associated private stormwater management facilities.
  - During inspections, provided technical assistance to property owners on the operation and maintenance of on-site stormwater management facilities. Also provided guidance when needed on pollution prevention best management practices (BMPs) for site activities.
  - Mapped MIP data, including MIP properties, facilities, inspections, and O&M plans.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Inspect 1,500 private stormwater facilities or 450 properties annually. Use education and enforcement tools to ensure that stormwater management operations and maintenance plans are followed.	Under the Maintenance Inspection Program (MIP), inspected 1,340 private stormwater facilities associated with 645 properties. Provided technical assistance and education to ensure facilities are sufficiently operated and maintained.
Revise the SWMM during the 2011-2016 permit term.	Adopted the revised SWMM in January 2014.
Track number, type, size, drainage area[2] and location of private facilities constructed annually.	Completed.

[2] Drainage area is tracked for all private stormwater management facilities subject to the SWMM (under an O&M plan).

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY 14-15)

Citywide

- Continued to implement retrofits to the existing storm drainage system (roadside ditches to swales or porous shoulder). (These retrofits are reported by watershed.)

Columbia Slough Watershed

- Completed construction of the NE 148th Water Quality Facility, which receives stormwater runoff from 180 acres in northeast Portland. This facility is the retrofit project identified by the City in accordance with permit Schedule A.6.c.

- Completed the design phase for treating stormwater runoff from approximately 2 acres of City right-of-way within outfall basin 77a. This basin receives runoff from NE Columbia Blvd., a high-traffic, industrial roadway, and discharges untreated runoff to a small cove on Whitaker Slough between NE 59th Place and NE 63rd Ave. This cove was the subject of a DEQ sediment cleanup project during the winter of 2013. Construction of the stormwater treatment facility is expected to begin winter of 2015.

- Continued the design phase for treating stormwater runoff from outfall basins 73A and 104B. Combined, these basins drain over 100 acres (30 of which are City right-of-way) and discharge untreated runoff to Whitaker Slough.

- Constructed four vegetated facilities to treat stormwater runoff from NE Marx Street, between NE 109 and 112th Avenues, that flows to the Slough via outfall 92.

- Designed four vegetated facilities to treat stormwater runoff from NE 112th Avenue, between NE Marx Street and the Slough, that flows to the Slough via outfall 92.

Johnson Creek Watershed

- Completed the Luther Road Habitat Restoration project to address an exposed combined sewer/stormwater interceptor. The project buried the sewer pipe crossing, restored a portion of Johnson Creek and its floodplain, improved stream habitat, provides stormwater treatment, and protects natural areas.

- Continued to monitor existing floodplain restoration projects to ensure effectiveness at Luther Road, Brookside, Kelley Creek, Tideman Johnson, Errol Creek, Foster Floodplain, and Schweitzer.

- Continued working with representatives from the City of Portland, Metro, State of Oregon, Lents industrial landowners, and Lents residents to develop concepts to integrate floodplain management and economic development in the Foster corridor 100-year floodplain.

Willamette Watershed

- Continued design of the Centennial Oaks Stormwater Project in Willamette Park. The project will treat stormwater from 1.4 acres of impervious area runoff from a parking lot and street.

- Began planning for a green street on SW Palatine Hill Road/Corbett Lane. The objective of the project is to manage stormwater runoff that currently flows untreated to the headwaters of a stream channel in Riverview Natural Area.

- Began SW Palatine Hill Rd/Frank Manor Lane green street pre-design. The project consists of two green streets and a ditch-to-swale conversion that will detain and treat stormwater from 7,100 square feet of impervious roadway that ultimately discharges to the headwaters of a stream in the Riverview Natural Area.

- Began Leif Erikson Drive Culvert pre-design to restore failing culverts along Leif Erikson Drive in Forest Park. The project will replace non-functioning culverts that are a source of sediment to drainage basins that discharge to the Willamette River.

Fanno and Tryon Creek Watersheds

- Completed construction for Interstate 5 at SW 26th Avenue Water Quality Facility to treat 24 acres of existing impervious area (in partnership with ODOT).

- Completed design for roadside drainage (ditch) and shoulder improvements on SW Stephenson between SW 35th and SW Boones Ferry Road and on SW Hamilton between SW Shattuck and SW 40th. About 4,700 feet of ditches are to be improved. Construction is scheduled for August 2015.

- Completed construction of a Green Street curb extension along SW Huber in the Tryon Creek watershed. The facility detains and treats stormwater runoff from 12,500 square feet of impervious roadway.

- Continued design of stormwater management improvements for 2.6 miles of SW Beaverton Hillsdale Highway to improve water quality and stream health in Fanno Creek.

- Completed construction of six vegetated stormwater management facilities along SW Multnomah Boulevard between SW 34th and SW 40th.

- Completed a project at SW Beaverton-Hillsdale Highway and 21st that reduces erosion and protects water quality in Fanno Creek.

- Completed construction of an outfall pipe to carry stormwater runoff from 24 acres in southwest Portland and from portions of Interstate 5. The 36-inch concrete pipe collects

runoff near SW 35th Drive close to Barbur Boulevard and the freeway and discharges stormwater to Falling Creek, a Tryon Creek tributary.

Stormwater System Plan

- Continued work on the *Stormwater System Plan*, a multi-year project to fully define and plan for the City's stormwater system needs.
  - Continued development of a citywide risk assessment for water quality that will incorporate the MS4 retrofit strategy.
  - Initiated development of a citywide risk assessment for approvable stormwater discharge points.
  - Continued predesign of several water quality and flow control projects in the Stephens Creek watershed, in partnership with the Willamette Watershed team.
  - Continued preliminary design and community outreach to explore retrofit options for the underserved Errol Heights neighborhood in southeast Portland, in partnership with the Johnson Creek Watershed team.
  - Initiated preliminary design and community outreach to explore retrofit options for Capitol Highway in southwest Portland, in partnership with the Fanno Tryon Watershed Team.

Green Streets

- Completed construction of the following Green Street projects:

  - Fifteen green street planters to manage 103,000 square feet of runoff from SW Multnomah Boulevard, between SW 25th and SW 45th, that would otherwise drain directly to Fanno and Tryon Creeks.

  - One green street curb extension to manage 12,600 square feet of runoff from SW Huber St, west of Quail Post Rd, that would otherwise drain directly to Tryon Creek.

  - Three green street planters to manage 30,200 square feet of runoff from SW Boones Ferry Rd, at SW Stephenson, that would otherwise drain to Tryon Creek.

Technical Assistance, Incentives, and Grants Programs

- Continued to provide technical assistance for projects that incorporate green building principles, including stormwater pollution prevention and management. In total, four building construction and EcoDistrict development projects were served by the Bureau of Planning and Sustainability's Green Building and Development program in FY 14-15. Additional green building events and activities related to stormwater management included 34 presentations and tours to a variety of sustainability- and building-related organizations, reaching a total of approximately 1,057 people.

- Continued to coordinate and offer Fix-It Fairs, a free neighborhood-oriented event that offers workshops and exhibits on home and garden topics. At each fair, over 100 workshops and exhibits provided residents with self-help information and resources on topics including

stormwater management, Naturescaping, and water conservation. During permit year 20, 1,747 people attended three fairs.

- The last projects were completed under the Ecoroof Incentive Program (which offered a financial incentive to property owners and developers to construct ecoroofs), as shown below:

Total projects completed	4
Total square feet completed	37,410
Total acres completed	.85
Total amount paid out	$ 187,050

- Through the Sustainable Stormwater Management Program (now integrated into the Stormwater System Planning Division), staff fielded public requests for information and technical assistance and provided technical assistance to a variety of projects:
  - Received over 40 requests for tours and speaking engagements. Conducted tours for professional planners, designers, developers, politicians, and staff from national and international jurisdictions.
  - Received over 25 requests for a green street.
  - Received requests for assistance from non-profit groups, students, and other jurisdictions in the form of design review and information sharing.
  - Presented information at 9 local, regional, and national seminars and conferences.
  - Received about 163,500 visits to the Sustainable Stormwater Management Program website; about 565,000 visits on the City Green blog that provides relevant information, examples, and announcements for citywide green infrastructure approaches; and about 17,190 visits on the Green Street Stewards website.
  - Continued to develop fact sheets, educational materials, and tour information for distribution and web publication for the sustainable stormwater management, watershed, and tree canopy programs. Examples include a self-guided bike tour of green infrastructure and green street steward profiles for social media Facebook page.

- Through Clean River Rewards, the City's stormwater discount program, provided information about stormwater management and eligibility for reductions in customers' monthly utility bills for managing stormwater onsite.

  - Managed the Clean River Rewards website to provide information and technical assistance. The website registered approximately 75,836 external hits during FY14-15.
  - Provided technical stormwater retrofit and registration assistance to 181 people upon request; put on eight workshops for a total of 194 attendees; and staffed an informational booth at three fix-it fairs , with over 1000 attendees at each event.
  - Verified stormwater discount registration at 139 active utility accounts, providing stormwater technical assistance on maintenance and stormwater facility improvements.

    As of August 2015, a total of 54,280 utility ratepayers with active accounts have registered for stormwater discounts:

- 51,469 single-family residential ratepayers account for a total of 114,206,845 square feet of impervious area managed for stormwater.
- 2,811 multifamily, commercial, and industrial ratepayers account for a total of 94,881,176 square feet of impervious area managed for stormwater.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Construct the following public facilities to provide treatment for stormwater runoff from approximately 336 acres:	Total acreage treated for stormwater runoff exceeded 336 acres as a result of construction of the facilities below, plus construction of additional facilities, as identified in annual reports.
• Construct the NE 148th Avenue stormwater management facility by FY 2014-15.	• Completed construction in FY 2014-15, treating stormwater runoff from 180 acres.
• Construct stormwater management facilities in the NE 122nd Ave subbasin by December 2012 (Columbia Slough Watershed).	• Completed construction of eight water quality planters along NE 122nd Avenue between NE Fremont and NE Shaver, designed to treat stormwater runoff from 2.89 acres.
• Convert 5,000 linear feet of roadside ditches to swales or porous shoulder (Tryon Creek and Fanno Creek watersheds) during the permit term.	• Completed design for roadside drainage (ditch) and shoulder improvements on SW Stephenson between SW 35th and SW Boones Ferry Road and on SW Hamilton between SW Shattuck and SW 40th. About 4,700 feet of ditches are to be improved, with construction is scheduled for August 2015. [Total conversion to date during this permit term is approximately 4,671 linear feet, managing approximately 2.15 acres of road runoff, in the Tryon Creek and Fanno Creek watersheds.]
• Construct stormwater management facilities along SW Beaverton-Hillsdale Highway and SW Barbur Blvd. and in commercial and multi-family residential areas (Tryon Creek and Fanno Creek watersheds) during the permit term.	• Continued design and construction of stormwater management facilities, as described under Fanno and Tryon Creek Watersheds section, above.
Track the number, type, drainage area, and location of public facilities constructed annually.	Completed (using GIS to track this information).

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

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY 14-15)

Land Acquisition and Protection

- Acquired one acre of land in the Willamette Watershed and one-half acre of conservation easement area in the Johnson Creek Watershed as part of the Grey to Green Land Acquisition Program.

Land Use Planning

- Continued planning processes that include goals and policies focusing on watershed health and environmental quality. Work in FY14-15 included:
  - Continued work on the *River Plan/Central Reach.*
  - Completed work on the *Central City 2035 West Quadrant Plan.*
  - Continued work on the *Central City 2035 Southeast Quadrant Plan.*
  - Released for public review the proposed draft of the *Comprehensive Plan*, which includes the entire package of goals and policies, updated land use maps, and citywide systems plan. Initiated hearings before the Planning and Sustainability Commission.

- Continued the Subwatershed Improvement Strategies process for six Northwest Willamette subwatersheds (Balch, Kittridge, Saltzman, Doane, Linnton and Miller) to identify opportunities to protect and improve conditions in these areas.

Tree Code

- Continued activities to prepare for full implementation of the Tree Policy Review and Regulatory Improvement Project, which was adopted by City Council in April 2011. Code changes, including the new Title 11: Trees, went into effect in January 2015. Title 11 establishes new tree preservation and planting requirements on development sites and standardizes the City's tree removal permit system. Adopted amendments to the Zoning Code will strengthen and clarify tree-related requirements on land division sites and in environmentally sensitive resource areas, including along stream corridors. New regulations will help preserve, expand, regenerate, and improve the quality of Portland's tree canopy.

Climate Change Planning

- City Council adopted Portland's first Climate Change Preparation Strategy (CCPS) in November 2014. The CCPS recognizes the critical role of the urban forest and natural systems in making the City more resilient to potential climate-related changes in summer air and water temperatures, urban heat island, storm intensity and flooding patterns, and frequency of landslides and wildfires. The CCPS includes a vulnerability assessment and actions to preserve and enhance the urban forest and natural systems, reduce impervious area,

maintain streamflow temperatures and water quality, and provide habitable conditions for people, fish and wildlife.

Watershed Revegetation Program

- Under the Watershed Revegetation Program, many public agencies, businesses, and other landowners participated in and helped fund revegetation projects on their properties and neighboring properties. The program is currently managing 1,748 project acres on both public and private property. Activities in FY14-15 included:

  Willamette River
  - Planted 35,702 plants on 60.9 acres. This included 2,176 deciduous trees, 5,020 coniferous trees, and 28,605 shrubs.

  Columbia Slough
  - Planted 62,078 plants on 14,525 linear feet of riverbanks and 89.3 acres. This included 12,940 deciduous trees, 550 coniferous trees, and 48,588 shrubs.

  Johnson Creek
  - Planted 24,059 plants on 5,230 linear feet of streambank and 22.9 acres. This included 6,493 deciduous trees, 2,000 coniferous trees, and 15,566 shrubs.

  Tryon Creek
  - Planted 2,040 plants on 70 linear feet of streambank and 2.6 acres. This included 335 deciduous trees, 205 coniferous trees, and 1,500 shrubs.

  Fanno Creek
  - Planted 13,495 plants 2,618 linear feet of streambank and 14.1 acres. This included 1,250 deciduous trees, 1,975 coniferous trees, and 10,270 shrubs.

Partnerships with Other Organizations

- Partnered with SOLV and the Friends of Baltimore Woods (FOBW) to engage community volunteers in watershed restoration at Baltimore Woods in North Portland. Cleared 98, 243 square feet of invasive plants, removed 5,280 pounds of trash, and planted 768 native trees and plants.

- In partnership with Portland Parks and the Mt. Tabor Park Weed Warriors, used community volunteers to enhance over 7 acres of parkland; removed 11 truckloads of invasive plants and debris and planted 431 native trees and plants. [also in P1-1]

- In partnership with Friends of Trees, planted 2,802 street trees and 1,072 yard trees in City of Portland right-of-way, on school properties, and in private yards.

- Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas. Activities included invasive plant species removal and native plant installation.

Fanno Parks Project Summary	
Restoration	
# Restoration Events	29
# Plants	618

Tryon Creek Parks Project Summary	
Restoration	
# Restoration Events	11
# of Plants	490

Willamette Watershed Parks Projects	
Restoration	
# Restoration events	137
# Plants planted	6,668

- In partnership with the SW Watershed Resource Center:
  - Facilitated the restoration (invasive removal, erosion control, and/or native planting) on 60 linear feet of streambank
  - Installed 560 native plants
  - Removed 7,500 square feet of invasive plants
  - Reduced stormwater runoff by at least 11,2000 gallons per year to reduce soil erosion through amendments, installation of porous walkways, native plants and other stormwater management best practices

- Supported the Johnson Creek Watershed Council's 17th annual Johnson Creek Watershed-wide Restoration Event, where 415 volunteers planted 6,795 native trees and shrubs, removed 33 cubic yards of invasive plant material, applied 3 units of mulch, and installed 1,000 feet of protective fencing.

Technical Assistance, Incentives, and Grants Programs

- Under BES's Community Stewardship Grants Program, awarded 13 stewardship grants totaling $95,000 for projects that included planting approximately 5,803 native trees, shrubs, and groundcover. (See PI-1 for project names and watershed locations.) The grants program also awarded 11 mini-grants totaling $3,700 in fiscal year 2014-2015. Mini-grants provided a variety of community groups and private property owners with native plant gift certificates for riparian and upland restoration and revegetation projects in all Portland watersheds. Approximately 852 trees, shrubs and groundcover were planted with mini-grants.

- Through the Treebate Program, provided incentives for residential property owners to plant 246 yard trees to improve local stormwater management.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Plant 20,000 trees and initiate revegetation work on 70 acres by the end of the permit cycle.	• Planted 32,944 trees (23,194 deciduous and 9,750 coniferous) on 189.8 acres. [Total to date during this permit term: Planted 183,127 trees (139,172 deciduous and 43,955 coniferous) on 1,104.9 acres]
Acquire 50 acres of land by the end of the permit cycle.	• Acquired 1.5 acres of land. [Total to date during this permit term: 553.5 acres]
Update the *Portland Plan* (an update to the City's *Comprehensive Plan*) by December 2013.	Completed. City Council adopted the P*ortland Plan* on April 25, 2012.

PM-1: Conduct program management, coordination, and reporting activities.

KEY BMP ACCOMPLISHMENTS, PERMIT YEAR 20 (FY 14-15)

- Coordinated with numerous other City bureaus and jurisdictions to continue implementation of the *Stormwater Management Plan* (as reported under the individual BMPs).
- Coordinated permit implementation activities with the Port of Portland.
- Submitted the NPDES MS4 annual compliance report 19 for FY13-14 on November 1, 2014.

MEASURABLE GOALS

Measurable Goal	Status as of 6/30/2015
Submit annual reports by November 1 of each year.	Submitted the FY13-14 annual report on November 1, 2014.

Section III
PORT OF PORTLAND

PORT OF PORTLAND

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

ANNUAL REPORT NO. TWENTY

July 1, 2014 – June 30, 2015

Prepared for:
Oregon Department of Environmental Quality

November 1, 2015

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APPENDICES

Appendix A Monitoring Objective Matrix
Appendix B Illicit Discharge Detection and Elimination Analytical Results

ACRONYMS

BMP – Best Management Practice

DEQ – Department of Environmental Quality

EMS – Environmental Management System

FOG – Fats, Oil, and Grease

HAZWOPER – Hazardous Waste Operations and Emergency Response

IDDE – Illicit Discharge Detection and Elimination

IGA – Intergovernmental Agreement

IPM – Integrated Pest Management

MEP – Maximum Extent Practicable

MFM – Marine Facilities Maintenance (Marine's general maintenance group)

MS4 – Municipal Separate Storm Sewer System

NOAA – National Oceanic and Atmospheric Administration

NPDES – National Pollutant Discharge Elimination System

PDX – Portland International Airport

PIC – Portland International Center

SPCC – Spill Prevention Control and Countermeasure

SWMP – Stormwater Management Plan

SWPCP – Stormwater Pollution Control Plan

TMDL – Total Maximum Daily Load

USB – Urban Services Boundary

USCG – United States Coast Guard

1.0 INTRODUCTION

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

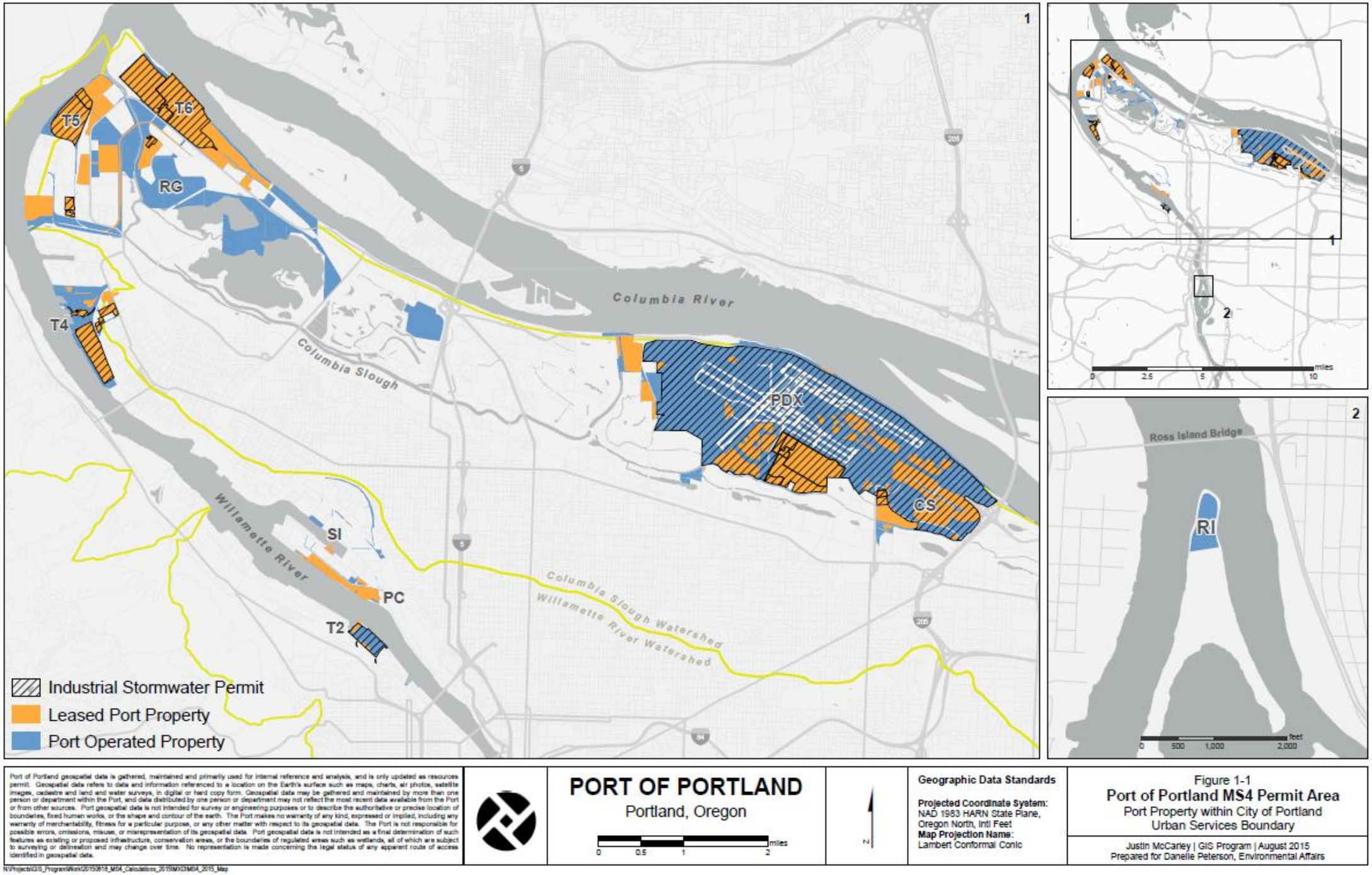
The Port and City of Portland are co-permittees on MS4 permit #101314. As required under Schedule B.5 of the permit, each co-permittee must submit an annual report. This report documents activity from July 1, 2014 to June 30, 2015 related to the Port's stormwater management efforts under the permit and associated December 28, 2012 Stormwater Management Plan (SWMP). The report emphasizes efforts and activities associated with individual best management practices (BMPs) from the Port's SWMP (as summarized in Section 7.0). Schedule B.5.a-i of the permit states the specific annual reporting requirements. These requirements are addressed within the report as follows:

1. **Status of SWMP implementation:** Section 7.1.1 through 7.1.8
2. **Status of the public education evaluation**: Section 7.1.4
3. **Summary of the adaptive management process for FY2013:**Section 8
4. **Proposed changes to the SWMP:** Section 8
5. **Summary of stormwater program expenditures:** Section 4.0
6. **Summary of monitoring results:** *See Section IV Monitoring Compliance Report of the combined report. Section 6.1 of this document explains the Port's monitoring coordination with the City.
7. **Proposed changes to the monitoring plan:** *See Section IV Monitoring Compliance Report of the combined report. Section 6.1 of this report explains the Port's monitoring coordination with the City.
8. **Summary describing Port's Illicit Discharge Program:** Section 7.1.1
9. **Overview of planning, land use changes, and new development:** Section 2.1

2.0 PORT OF PORTLAND PERMIT AREA AND RESPONSIBILITIES

The Port of Portland owns approximately 5,497acres within the City of Portland (City) Urban Services Boundary (USB). Port property is divided into three primary Business Lines under the Operations Division: 1) Aviation, 2) Marine, and 3) Industrial Development. Within the City USB, the Aviation Business Line consists of Portland International Airport (PDX), the Marine Business Line includes Marine Terminals 2, 4, 5 and 6, and the Industrial Development Business Line consists of the following industrial parks: Swan Island, Mocks Landing, Rivergate, Cascade Station, and Portland International Center (PIC). Figure 1-1 (pg. 2) shows the Port's permit area, breaking out leased property and facilities with Industrial Stormwater General Permits.

Figure 1 Port of Portland MS4 Permit Boundary Area



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The Port also owns a number of undeveloped properties within the USB including wetland mitigation sites, natural areas, and vacant tax lots. The Port is in a unique situation with regard to the typical municipal planning, permitting, and land use modification processes. The City of Portland is responsible for these activities and the Port complies with their process. For the purposes of this report, all reporting on these activities contained in section B.5.i will be satisfied in the City's section. With respect to the impervious surface reporting requirement in B.5.i the Port estimates during the 2014-15 reporting period it had 2,163 acres of impervious surface. This represents 39% of total Port property within the City of Portland USB.

PDX, the marine terminals, and the industrial parks are partially occupied by tenants. The Port manages those tenant properties through lease agreements. Leased property represents approximately 33% of Port property within the USB. A more detailed description of Port operating areas is included in Section 2.1.

Property owned by the Port is primarily zoned for commercial and industrial use. Many of these areas accommodate industrial activities that require DEQ-issued NPDES industrial stormwater general permits (1200-Z and 1200-COLS permits) or individual permits addressing stormwater discharge. Sixty-seven percent of the Port's holdings within the USB are regulated under these permits. PDX and portions of Terminal 2 are operated by the Port under DEQ-issued industrial stormwater discharge permits. In addition, some tenants occupying leased property on Terminals 2, 4, 5, 6, and the industrial parks also operate under 1200-Z, 1200-COLS or individual NPDES stormwater permits. For Port operations within these areas, several of the MS4 permit requirements are satisfied through implementation of industrial stormwater permit requirements, addressed in their Stormwater Pollution Control Plans (SWPCPs). Section 2.2 addresses how these activities are coordinated with the Port's MS4 permit responsibilities.

2.1 MS4 Permit Area

2.1.1 Portland International Airport

PDX comprises an area of approximately 2803 acres and is located in Northeast Portland between the Columbia River and the Columbia Slough. The facility is owned and operated by the Port. However, numerous aviation-related tenants also conduct operations at PDX.

Stormwater runoff from PDX property discharges into the Columbia Slough through a series of pipes, open channels, and 9 major outfalls. These stormwater discharges are permitted under PDX's NPDES 1200-COLS Industrial Stormwater General Permit issued and administered by DEQ. The 1200-COLS permit is structured to specifically address Columbia Slough Total Maximum Daily Load (TMDL) parameters, including dissolved oxygen, pH, nutrients, bacteria, and toxics. With the exception of the Oregon Air National Guard and Yoshida Foods international (who have their own 1200-COLS permits), PDX tenants whose operations trigger the need for a stormwater permit are required to be a co-permittee under PDX's 1200-COLS permit.

In addition to the 1200-COLS permit, PDX also holds an NPDES a 1200-CA Construction Discharge Permit, a Water Pollution Control Facility (WPCF) 1700-B Wastewater Permit, a

NPDES Anti-icing/Deicing Waste Discharge Permit, and a pre-treatment permit issued by the City of Portland for deicing discharges to the sanitary system.

2.1.2 Marine Terminals

The Port has four active shipping terminals that are managed by the Port's Marine Business Line. The terminals collectively occupy approximately 1009 acres along the Willamette River (Terminals 2, 4, and 5) and Columbia River/Slough (Terminal 6). They handle the shipping, receiving, and temporary storage of finished goods, agricultural products, and raw materials.

The industrial stormwater discharge permits required for Terminal 6 discharges into the Columbia River and the Columbia Slough are covered by 1200-COLS permits held by the tenants. The Port continues to hold a 1200-Z permit for the Port-managed area of Terminal 2. A number of properties located at Terminals 2, 4, and 5 are also leased to tenants. Several of these tenants hold 1200-Z or individual permits that are issued by DEQ and administered by the City.

2.1.3 Industrial Parks

The Port's Industrial Development Business Line manages the Port-owned industrial parks, Swan Island, Mocks Landing, Rivergate, Cascade Station, and Portland International Center (PIC), totaling approximately 1518 acres. Several industrial park tenants also hold 1200-COLS or 1200-Z permits that are issued by DEQ and administered by the City.

2.1.4 Undeveloped Properties

The Industrial Development Business Line also manages approximately 1506 acres of undeveloped property within the City's USB. This does not include West Hayden Island, which is within the unincorporated USB and does not receive city services at this time. Stormwater management activities for undeveloped properties discharging into the Port's MS4 are conducted under the MS4 permit.

2.2 MS4 Permit Responsibilities

Many of the requirements of the industrial stormwater general discharge permits overlap with requirements of the MS4 permit. A large proportion (67%) of the area included in the Port's MS4 permit area is also regulated under industrial stormwater permits, which have been issued to either the Port or its tenants.

The City of Portland and Port are co-permittees on MS4 Permit #101314. The City regulates stormwater on a city-wide basis with some implementation overlapping the Port's MS4 area. The Port and City coordinate permit management activities through an intergovernmental agreement (IGA).

Table 1 (Permit Requirements and Responsibilities) was developed to explain the complex relationship between the Port's management of stormwater through its MS4 permit, the City's overlapping stormwater management activities through its MS4 permit, and DEQ's regulation of industrial stormwater on some Port property through other NPDES permits. This tool was included in the Port's 2012 SWMP to show specific program coverage for each MS4 permit requirement. Table 1 lists the SWMP requirements from the Port's MS4 permit along the left

hand column. Responsibility descriptions for each SWMP requirement are split according to the following two categories: (1) Port MS4 permit areas that do not have industrial stormwater permits (1200-Z or 1200-COLS permits), and (2) Port MS4 permit areas where the Port or its tenant has a general industrial stormwater permit (1200-Z or 1200-COLS permits). The two responsibility categories are further split between tenants and Port operations. For some tenants and Port operating areas (Terminals 2 and PDX) with an industrial stormwater permit, several of the MS4 permit requirements related to specific activities are addressed through implementation of the industrial stormwater permits. These requirements are shown shaded in gray on Table 1. In addition, permit requirements within the Port's jurisdiction covered by the City's stormwater management activities are also shaded in gray on Table 1. Areas left unshaded on Table 1 are addressed by BMPs in the Port's 2012 SWMP. These unshaded areas list the specific BMPs that meet each corresponding permit requirement.

Section 7.0 of this annual report outlines the BMPs listed in the Port's 2012 SWMP and specifies responsible parties for each BMP implementation task. In addition, Section 7.0 describes the Port's SWMP implementation during the permit year to address tracking measures and progress toward meeting measurable goals under each BMP.

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Port of Portland MS4 Permit Requirements and Responsibilities (Areas shaded in gray are MS4 permit requirements that are not addressed by BMPs in the Port's SWMP because the requirements are either covered by the City of Portland, or are covered under an industrial stormwater permit. Unshaded Areas are covered by the Port's SWMP BMPs listed below in Table 1.**)**

Table 1 Port of Portland MS4 Permit Requirements and Responsibilities

MS4 Permit SWMP Requirements	MS4 Service Areas Not Covered Under Industrial Stormwater Permits		MS4 Service Areas With Industrial Stormwater Permits	
	Tenants	**Port Operations**	**Tenants**	**Port Operations**
Schedule A.4.a Illicit Discharge Detection and Elimination.				
i. Prohibit, through ordinance or other regulatory mechanism, illicit discharges	BMP: Implement the Illicit Discharge Detection and Elimination Program			
ii. Describe enforcement response procedures	BMP: Implement the Illicit Discharge Detection and Elimination Program			
iii. Develop pollutant parameter action levels	BMP: Conduct Dry-Weather Field Screening			
iv. Conduct annual dry weather inspection activities including field screening	BMP: Conduct Dry-Weather Field Screening			
v. Identify response procedures to investigate portions of the MS4 where relevant information indicates the likely presence of illicit discharges	BMP: Conduct Dry-Weather Field Screening			
vi. Maintain a system for documenting and procedures for responding to illicit discharges	BMP: Conduct Dry-Weather Field Screening			
vii. Appropriate action for illicit discharge removal	BMP: Implement the Illicit Discharge Detection and Elimination Program		Spill response activities address employee reporting and are covered under 1200-Z and 1200-COLS permits[1] BMP: Implement the Illicit Discharge Detection and Elimination Program	
viii. Spill prevention and response	BMP: Implement a Spill Response Program for Port Operated Property		Covered under 1200-Z and 1200-COLS permits[2]	
ix. Notify affected municipality of illicit discharge originating within the permittee's permit area	BMP: Implement the Illicit Discharge Detection and Elimination Program			
x. Notify responsible municipality of illicit discharge affecting the permittee, originating outside of the permittee's permit area	BMP: Implement the Illicit Discharge Detection and Elimination Program			
xi. Maintain maps showing major MS4 outfalls	BMP: Conduct Dry-Weather Field Screening			
xii. Unless identified as a significant source of pollutants, the following non-stormwater discharges are not considered illicit discharges (see Schedule A.4.a.xii)	BMP: Implement a Water Line Flushing Procedure			
Schedule A.4.b Industrial and Commercial Facilities				
i. Screen existing and new industrial facilities	BMP: Screen Existing and New Industrial Facilities		These areas are already covered by an industrial stormwater NPDES permit	
ii. Notify DEQ and facility if subject to an industrial NPDES permit	BMP: Screen Existing and New Industrial Facilities		These areas are already covered by an industrial stormwater NPDES permit	
iii. Inspection of industrial or commercial areas identified as significant sources of pollutants	BMP: Implement an Inspection Program for Significant Pollutant Source Areas			
Schedule A.4.c Construction Site Runoff Control				
i. Ordinance that requires erosion and sediment controls ii. Require construction site operators to develop site plans and implement erosion and sediment control BMPs	Implemented through the City of Portland's erosion control ordinance; may also be covered under a 1200-C permit	Implemented through the Port's 1200-CA Permit, the City of Portland's erosion control program and related contract	Implemented through the City of Portland's erosion control ordinance; may also be covered under a 1200-C permit	Implemented through the Port's 1200-CA Permit and related contract specifications

MS4 Permit SWMP Requirements	MS4 Service Areas Not Covered Under Industrial Stormwater Permits		MS4 Service Areas With Industrial Stormwater Permits	
	Tenants	**Port Operations**	**Tenants**	**Port Operations**
iii. Require construction site operators to prevent/ control non-stormwater waste		specifications.		
iv. Erosion control site plan review				
v. Perform on-site inspections				
vi. Maintain enforcement response procedures				
Schedule A.4.d Education and Outreach				
i. Implement a documented public education and outreach strategy	BMP: Implement Public Education Measures to Protect Stormwater Quality.			
ii. Provide educational material to the community or conduct equivalent outreach activities	BMP: Implement a Tenant Stormwater BMP Program	N/A	BMP: Implement a Tenant Stormwater BMP Program	N/A
	BMP: Implement Public Education Measures to Protect Stormwater Quality			
iii. Provide public education on pesticide, herbicide, fertilizer, and other chemicals	BMP: Require Training and Licensing for Staff Conducting Pest Management Activities BMP: Implement a Tenant Stormwater BMP Program			
iv. Provide public education on proper operation and maintenance of privately-owned/ operated stormwater quality facilities	BMP: Implement a Tenant Stormwater BMP Program BMP: Implement a Program for the Tracking and Maintenance of Private Structural Controls			
v. Provide notice to construction site operators regarding training for erosion and sediment control	BMP: Provide Erosion Prevention and Sediment Control Training for Construction Inspectors			
vi. Conduct/ participate in a public education effectiveness evaluation	BMP: Participate in a Public Education Effectiveness Evaluation			
vii. Include training for municipal employees involved in MS4 activities	BMP: Implement a Spill Response Training Program. BMP: Implement a Municipal Staff Training Program for Stormwater Pollution Prevention BMP: Require Training and Licensing for Staff Conducting Pest Management Activities		Covered under 1200-Z and 1200-COLS permits[3]	
viii. Promote, publicize, and facilitate public reporting of illicit discharges	BMP: Implement the Illicit Discharge Detection and Elimination Program			
Schedule A.4.e Public Involvement and Participation				
e. Implement a public participation process for receiving and considering comments on the SWMP and TMDL benchmarks	BMP: Provide for Public Participation with SWMP and Benchmark Submittals			
e. Implement a public participation approach that provides opportunities for the public to effectively participate in the implementation of the co-permittee's stormwater management program	BMP: Implement a Public Participation Approach that Provides Opportunities for the Public to Effectively Participate in the Implementation of the Stormwater Management Program			

MS4 Permit SWMP Requirements	MS4 Service Areas Not Covered Under Industrial Stormwater Permits		MS4 Service Areas With Industrial Stormwater Permits	
	Tenants	Port Operations	Tenants	Port Operations
Schedule A.4.f Post-Construction Site Runoff				
i. Implement a post-construction stormwater pollutant and runoff control program	BMP: Develop, Adopt, and Implement New Port-Specific Post-Construction Runoff Control Standards			
ii. Identify, and where practicable, minimize or eliminate ordinance, code and development standard barriers	BMP: Develop, Adopt, and Implement New Port-Specific Post-Construction Runoff Control Standards			
iii. Develop or reference an enforceable post-construction stormwater management manual	BMP: Develop, Adopt, and Implement New Port-Specific Post-Construction Runoff Control Standards			
vi. Review, approve, and verify proper implementation of post-construction site plans	BMP: Develop, Adopt, and Implement New Port-Specific Post-Construction Runoff Control Standards			
v. Require off-site stormwater management for locations limited in their ability for on-site stormwater capture and treatment or flow reduction	BMP: Develop, Adopt, and Implement New Port-Specific Post-Construction Runoff Control Standards			
vi. Describe inspection and enforcement response procedures to address compliance issues with post-construction stormwater management performance standards	BMP: Develop, Adopt, and Implement New Port-Specific Post-Construction Runoff Control Standards			
Schedule A.4.g Pollution Prevention for Municipal Operations				
i. Operate and maintain public streets, roads, and highways	The City of Portland is responsible for operation and maintenance of the public right-of-way			
	BMP: Implement a Street and Vehicle Maneuvering Area Cleaning and Maintenance Program			
ii. Implement a program to control the use and application of pesticides	BMP: Limit Landscape Maintenance Activities Impact on Stormwater BMP: Require Appropriate Training and Licensing for Pest Management Activities BMP: Implement a Tenant Stormwater BMP Program			
iii. Inventory, assess, and implement a strategy to reduce the impact of stormwater runoff from facilities that treat, store, or transport municipal waste, not already covered by a 1200 series permit	No tenant properties currently accommodate municipal facility waste	The Port does not operate any facilities that fall under this requirement and are not covered under a 1200 series permit.	N/A	N/A
iv. Implement controls to limit infiltration of seepage from the municipal sanitary system	BMP: Implement a Program to limit infiltration from Port-owned sanitary sewer system to the MS4			
v. Implement a strategy to prevent or control the pollutant discharge from firefighting training activities	The only firefighting training facility is located at PDX, which is covered by a 1200-COLS permit			
vi. Retrofitting flood control facilities	The City of Portland manages water quality improvements on a master planning level. Any potential flood control retrofits will be considered as part of the Retrofit Analysis			
Schedule A.4. h Structural Stormwater Controls Operations and Maintenance				
i. Implement a program to verify structural control facilities and controls are inventoried, mapped, inspected, operated and maintained	BMP: Implement a Stormwater System Cleaning and Maintenance Program BMP: Implement a Program for Tracking and Maintenance of Private Structural Controls		Covered under 1200-Z and 1200-COLS permits[4]	Covered under 1200-Z and 1200-COLS permits[4]
ii. Develop and implement a plan or approach to guide the	BMP: Implement a Stormwater System Cleaning and Maintenance Program		Covered under 1200-Z and 1200-COLS	Covered under 1200-Z and 1200-COLS

MS4 Permit SWMP Requirements	MS4 Service Areas Not Covered Under Industrial Stormwater Permits		MS4 Service Areas With Industrial Stormwater Permits	
	Tenants	Port Operations	Tenants	Port Operations
long-term maintenance and management of all publically-owned and privately owned stormwater facilities	BMP: Implement a Tenant Stormwater BMP Program.		permits[4]	permits[4]
Schedule A.6.c Stormwater Retrofit Project				
ii. Identify one stormwater quality improvement project, at a minimum, to be initiated constructed and/or implemented during the permit term	BMP: Develop, Adopt, and Implement New Port-Specific Post-Construction Runoff Control Standards			
Schedule B1-B4 Monitoring Component Requirements				
The Port must assist with monitoring efforts in conjunction with requirements as stated in Table B-1, Schedule B.1.b	Pursuant to an IGA, the Port of Portland and the City of Portland have a joint monitoring program conducted by the City to meet the requirements specified under Schedule B			

Table 1 Port MS4 Permit Requirements 1

Notes:

[1]The 1200-Z and 1200-COLS cover this requirement in Schedule A under "Non-Stormwater Discharges."
[2]The 1200-Z and 1200-COLS cover this requirement in Schedule A under "Spill Prevention and Response Procedure."
[3]The 1200-Z and 1200-COLS cover this requirement in Schedule A under "Spill Prevention and Response Procedure" and "Employee Education."
[4]The 1200-Z and 1200-COLS cover this requirement in Schedule A under "Preventative Maintenance", "Control Measures for Technology Based Effluent Limits" and "Required (SWPCP) Elements"

3.0 PORT OF PORTLAND ORGANIZATIONAL STRUCTURE

The Port's Environmental Operations Department is responsible for administering the MS4 permit and the SWMP. The Water Quality Manager serves as the MS4 permit manager. Staff from Environmental Operations and each of the three business lines (Aviation, Marine, and Industrial Development) is responsible for implementing Port environmental programs to ensure permit compliance. As a means of coordinating Port-wide programs and policies, environmental program managers regularly meet with cross-functional teams that include Port operating area staff. One means of coordination between Port staff is through the Water Resources Coordination Group (WRCG). This group includes staff from Environmental Operations, Legal, Aviation, Marine, Industrial Development, Public Affairs, and Engineering. The WRCG generally meets monthly and is responsible for providing input on Port-wide stormwater policy issues, water quality, and permit implementation. The Water Quality Manager* serves as the lead for the WRCG.

With respect to implementation of the Port's industrial stormwater discharge permits, Environmental Operations staff prepares, updates, and ensures implementation of the PDX SWPCP in coordination with the co-permittees as well as the Terminal 2 SWPCP. Tenants with industrial stormwater discharge permits are also required to prepare, maintain and implement SWPCPs. The City (DEQ's agent) coordinates directly with Port tenants holding these permits.

The Environmental Affairs group was merged into the Environmental Operations group during the 2014-2015 reporting year. Environmental Operations is now responsible for all tasks previously held by the Environmental Affairs group.

4.0 STORMWATER EXPENDITURES

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

The Port derives almost all revenue from business transactions with the users and tenants of Port facilities. A small proportion (approximately three to four percent) of the Port's overall revenue is from property tax. Business transactions generally occur between the Marine Business Line, the Aviation Business Line (Commercial Aviation and General Aviation), the Industrial Development Business Line, and associated users and tenants of those properties. Industrial Development Business Line revenue sources can also include sales of property. The Port also receives revenue from the U.S. Army Corps of Engineers for dredging services.

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

The Port annually budgets resources to fund projects and programs identified in the Strategic and Business Line Plans. Program expenses are allocated among Business Lines and departments involved in implementation of the program. Specifically, stormwater resources are allocated across the following business lines, Information Technology (IT), Legal, Engineering, Marine and Industrial Development and Aviation. Stormwater program expenditures include the cost of

staff salary (including fringe costs), permit fees, contractor and consultant fees, stormwater infrastructure, City of Portland stormwater fees, disposal of collected material, sample analysis, stormwater training, and outreach materials.

Table 2 shows estimated stormwater program expenditures broken out by area and in total for fiscal year 2014-15 and the estimates for 2015-2016. Marine and Industrial Development Business Lines are shown together.

Table 2 Summary of Port Stormwater Expenditures

Department	Estimated 2014-15 Stormwater Expenditures	Projected 2016-17 Stormwater Expenditures
Marine, and Industrial Development Business Lines	$1,075,654	$1,075,654
Aviation Business Line	$5,030,071	$3,971,912*
Engineering	$1,572,997	$3,000,000
IT	$48,256	$48,256
Legal	$16,640	$16,640
Totals	$7,743,619	$8,112,462

**Expenditure reduction due to the completion of the stormwater master plan and the completion of the deicing system treatment plan.*

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

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

The Port has statutory authority to enact ordinances to regulate stormwater sewers that it owns, operates, maintains, or controls. The Port Commission adopted Ordinance No. 361 in 1992, which asserts the Port's regulatory authority over its stormwater system and discharges into that system. Section 3 prohibits any person from making, causing, or allowing an illicit discharge into a storm sewer owned or operated by the Port. Section 4 requires written permission from the Port in order to make a connection to a Port storm sewer. Section 5 authorizes the Port to inspect Port-owned property for violations of the Ordinance or applicable law that governs the conveyance or disposal of stormwater. In addition, the Ordinance provides the Port with authority to control the contribution of pollutants to storm sewers owned or operated by the Port; the quality of stormwater discharged from the sites of industrial activity on land owned by the Port; and the discharge to storm sewers owned or operated by the Port of pollutants from spills, dumping, or the disposal of materials other than stormwater.

In addition to the Ordinance, the Port has legal authority to control the contribution of pollutants to the municipal storm sewer through contracts with Port tenants. However, the Port has no legal authority over stormwater runoff from private and public property that discharges stormwater into the Port's MS4 but is not owned by the Port. Lease agreements require the lessees to comply with the Port's MS4 permit. Through these regulatory and contractual mechanisms, the Port works with tenants and users of Port facilities to implement BMPs that control the contribution of pollutants to Port storm sewers.

6.0 STORMWATER MONITORING

The Port's monitoring program consists of environmental and BMP monitoring elements. Activities within these groups are in place to meet Schedule B monitoring requirements, including the following MS4 monitoring objectives:

1. Evaluate the source(s) of the 2004/2006 303(d) listed pollutants applicable to the co-permittee's permit area;
2. Evaluate the effectiveness of BMPs in order to help determine BMP implementation priorities;
3. Characterize stormwater based on land use type, seasonality, geography, or other catchment characteristics;
4. Evaluate long-term trends in receiving water quality associated with storm water discharges;
5. Assess the chemical, biological, and physical effects of MS4 runoff on receiving waters;
6. Assess progress towards meeting TMDL pollutant load reduction benchmarks.

Appendix A explains how each monitoring program activity within the two elements relates to these objectives. A description of each monitoring program element is provided below.

6.1 Environmental Monitoring

The Port satisfies the MS4 environmental monitoring requirements through an IGA with the City of Portland. The IGA specifies the terms and conditions regarding how the Port shares costs with the City for environmental monitoring efforts. The City's Quality Assurance Monitoring Plan (QAMP) consists of in-stream (event), in-stream (continuous), stormwater, pesticide, mercury, and macroinvertebrate monitoring elements. The plan can be downloaded at http://www.portlandonline.com/bes/index.cfm?a=349082&c=37485. A discussion of this program and its operations during FY2014 is included in City of Portland's Monitoring Compliance Report (Section IV of the Annual Report).

6.2 Best Management Practice (BMP) Monitoring

The Port's BMP monitoring activities are described as tracking measures and measureable goals in the most recently approved SWMP, submitted to DEQ on December 28, 2012. These monitoring activities are specific indicator metrics that help document the completion of tasks and assess the relative effectiveness of BMPs. The implementation tasks, tracking measures, and measurable goals associated with each Port BMP are provided in Sections 7.1.1 through 7.1.8.

6.3 ADDITIONAL ELEMENTS

The following additional elements listed in Schedule B.5.j were submitted to the DEQ prior to the November 1, 2014 deadline:

- The TMDL Pollutant Load Reduction Evaluation.
- The Wasteload Allocation Attainment Assessment.
- The 303(d) evaluation.

6.4 Additional Stormwater Monitoring Activities

The Port collects and submits additional stormwater monitoring data to DEQ as required by the Port's various NPDES Stormwater permits. Data collected for these permits is not included in the MS4 permit annual report, but is available through DEQ upon request.
This monitoring provides useful data about stormwater discharges from Port industrial properties. Information resulting from these sampling events has been used to manage the stormwater programs at these facilities and may continue to be useful for understanding water quality impacts from different types of industrial sources.

The Port submitted stormwater monitoring data to DEQ for the following industrial stormwater discharge permits in FY2014:

- NPDES 1200-COLS Industrial Stormwater Discharge Permits, DEQ File No. 107220 (PDX)
- NPDES 1200-Z Industrial Stormwater Discharge Permit, DEQ File No. 114024 (Terminal 2)
- NPDES Deicing Permit No. 101647

7.0 ACCOMPLISHMENTS FOR PERMIT YEAR twenty (2014-15)

7.1 SWMP Implementation

The annual report content and format is based on the SWMP submitted to DEQ on December 28th, 2012. The SWMP is structured into eight major elements. These elements contain the necessary BMPs to address MS4 permit requirements included in Schedule A(4)(a-h). Reporting on tracking measures and progress towards associated measurable goals are shown in italics for each BMP below. Reporting regarding any task not addressed by the corresponding tracking measures or measurable goal response is addressed in italics directly under the task.

7.1.1 Element #1: Illicit Discharge Detection and Elimination

BMP: Implement the Illicit Discharge Detection and Elimination (IDDE) Program

Implementation Tasks:

1. Continue to implement documented illicit discharge detection and elimination procedures (Responsibility: Operations Environmental).
2. Update the illicit discharge detection and elimination procedures by November 1, 2011 per provisions consistent with the MS4 NPDES permit language (Responsibility: Environmental Affairs).
3. Implement a reporting program for potential illicit discharges by maintaining spill notification signs throughout Port property (Responsibility: Operations Environmental, Marine Properties Maintenance, Marine Facilities Maintenance (MFM), and PDX Maintenance).
   - ✓ *Operations staff continues to be trained on spill notification annually. Notification signage is maintained on both Marine and Aviation properties.*

Tracking Measures:

1. Track the status of updating the illicit discharge detection and elimination procedures.
   - ✓ *Previously completed (FY2011).*

2. Track the number, type, location, and resolution of any illicit discharge investigations conducted.
   - ✓ *Aviation did not have any reportable illicit discharge investigations in FY2014. (*See summary under BMP: Conduct Dry-Weather Field Screening tracking measures.)*
   - ✓ *Marine did not have any reportable illicit discharges investigations in FY2014. (*See summary under BMP: Conduct Dry-Weather Field Screening tracking measures.)*

Measureable Goals:

1. Update the illicit discharge detection and elimination procedures by November 1, 2011.
   - ✓ *Previously completed (FY2011)*

BMP: Conduct Dry-Weather Field Screening

Implementation Tasks:

1. Conduct annual dry-weather field screening activities at all priority outfall locations (Responsibility: Environmental Operations).
2. Annually, as necessary, update Port data files related to outfall locations, in accordance with dry-weather field screening activities (Responsibility: Environmental Operations).
3. Update the dry-weather field screening procedures by June 30, 2012 to be in accordance with MS4 permit requirements (Responsibility: Environmental Affairs).

Tracking Measures:

1. Track the number and location of priority outfalls inspected during dry-weather field screening activities.
   - ✓ *Aviation inspected 13 outfalls.*
   - ✓ *Marine inspected 53 outfalls.*
   - ✓ *The location of Port "Priority Outfalls" for dry-weather field screening is mapped in the Port's GIS system.*
2. Summarize dry-weather field screening inspection results and indicate outfalls requiring sampling or follow up activities.
   - ✓ *Aviation screening was conducted on 09/10/14.*
     - ***Summary:*** *Thirteen outfalls were inspected. Outfalls for PDX basins, 3, 4, and 8A displayed visible flow. All four of the outfalls with flow have been investigated in previous years and the source has been determined to be groundwater infiltration and/or landscape irrigation water (both allowable discharges). This year each outfall with flow was sampled, visual observations were similar to those in the past, and no other potential source of the flow could be identified to indicate an illicit discharge. PDX has an extremely high water table; studies performed for the Port have documented significant groundwater infiltration into the Port's stormwater system. Analytical results can be found in Appendix B.*
   - ✓ *Marine screening was conducted on 08/08/2014 and 08/18/2014.*

- ***Summary:*** *Fifty-three Port outfalls were inspected. No visible discharges were observed.*

3. Indicate the outcome and resolution of inspection activities conducted.

   ✓ ***Aviation:***

   - ***Outfall 3:*** *A very small flow was observed on 08/25/14. The flow did not have any distinguishing characteristics that would indicate it was illicit. Historically groundwater flows have been present during previous dry weather field inspections. Flow attributed to groundwater, no investigation. Samples were collected and sent to the lab for ammonia, chlorine, conductivity. Temperature and pH were measured in the field. Results indicated that the flow was most likely groundwater.*
   - ***Outfall 4:*** *A trickle of flow was observed 08/25/14. The flow did not have any distinguishing characteristics that would indicate it was illicit. Historically groundwater flows have been present during previous dry weather field inspections. Flow attributed to groundwater, no investigation. Samples were collected and sent to the lab for ammonia, chlorine, conductivity. Temperature and pH were measured in the field. Results indicated that the flow was most likely groundwater.*
   - ***Outfall 8A:*** *Low flow was noted on 08/25/14. The flow did not have any distinguishing characteristics that would indicate it was illicit. Historically groundwater flows have been present during previous dry weather field inspections. Flow attributed to groundwater, no investigation. Samples were collected and sent to the lab for ammonia, chlorine, conductivity. Temperature and pH were measured in the field. Results indicated that the flow was most likely groundwater.*

<u>Measureable Goals:</u>

1. Update dry-weather field screening procedures, in accordance with permit requirements by July 1, 2012.

   ✓ *Previously completed (FY2011)*

2. Inspect priority outfalls annually.

   ✓ *A total of 66 priority outfalls were inspected Port-wide as part of dry-weather field screening activities in 2014-15.*

BMP: Implement a Spill Response Program for Port Operated Property

<u>Implementation Tasks:</u>

1. Implement the Port's spill response procedure and update as necessary (Responsibility: Environmental Operations).
2. Participate in the City's Spill Response Committee (Responsibility: Environmental Operations).

   ✓ *Staff from Environmental Operations continues to be active on the City of Portland's Regional Spill Committee and attend quarterly meetings when they are held.*

3. Ensure trained Port staff members are available for on-call spill response, in addition to ensuring current contracts with on-call spill response contractors (Responsibility: Environmental Operations).

Tracking Measures:

1. Track the number of spills of a reportable quantity in which a spill response was conducted.
   - ✓ *No reportable spills were responded to at Aviation facilities in FY2014.*
   - ✓ *One reportable spill was responded to at Marine facilities in FY2014.*

Measureable Goals:

1. Implement the Port's Spill response procedures.
   - ✓ *The Port continues to train appropriate employees in order to properly implement effective spill response procedures. Reportable quantity spill cleanup is conducted by on-call contractors trained and equipped to minimize discharges to the environment. Incidental spill response is performed by trained employees.*

BMP: Implement a Water Line Flushing Procedure

Implementation Tasks:

1. Implement a water line flushing procedures to ensure appropriate disposal of chlorinated water (Responsibility: PDX Maintenance, MFM).

Measureable Goals:

1. Implement waterline flushing consistent with guidelines described in the BMP description included in the December 28, 2012 SWMP.
   - ✓ *Marine and Aviation staff are aware of the requirements associated with this type of discharge and implement procedures to comply with the Port's work instruction ("Disposal of Chlorinated Water: Hydrant & Waterline Flushing") on the subject. This work instruction has been posted for operating area reference and is covered in stormwater pollution prevention training.*

7.1.2 Element #2: Industrial and Commercial Facilities

BMP: Screen Existing and New Industrial Facilities

Implementation Tasks:

1. Coordinate with the City of Portland over the permit term to develop a screening process for industrial facilities (Responsibility: Environmental Affairs).

Tracking Measures:

1. Track leaseholds that have an individual or industrial stormwater permit.
   - ✓ *The Port maintains a list of tenants who hold individual and general Industrial Stormwater Permits. These include: Yoshida Foods International Limited Partnership, International Container Terminal Services, Inc., Kinder Morgan Bulk Terminal 4, Toyota Logistics Services, Inc., Columbia Grain, Inc., Auto Warehousing Company (for Hyundai),Swan Island Batch Discharge Plant (Rinker), the Oregon Air National Guard, Con Global Industries, Millbank Materials and Northwest Cascade Honey Bucket.*

Measureable Goals:

1. Coordinate with the City of Portland on a process for screening industrial facilities over the permit term.
   - ✓ *The Port has an IGA with the City which states that the City will cover the screening of Port tenants regarding the need for an industrial permit.*

BMP: Implement an Inspection Program for Significant Pollutant Source Areas

Implementation Tasks:

1. Conduct inspections of Priority Facilities annually, or more frequently if needed (Responsibility: Environmental Operations).
2. If inspections identify conditions needing improvements, coordinate with tenant and Port property manager to ensure appropriate control measures to minimize pollutant loading from priority facilities (Responsibility: Environmental Operations).

Tracking Measures:

1. Track the number of facilities inspected annually.
   - ✓ *14 inspections of Aviation Priority Facilities were conducted in FY2014.*
   - ✓ *15 inspections of Marine Priority Facilities were conducted in FY2014.*
2. Track improvements made to Priority Facilities as a result of inspections.
   - ✓ *Inspection follow up letters are kept by Environmental Operations documenting any issues that require attention. In FY2014 some of the issues addressed included, maintaining spill and stormwater training documentation, updating Spill Prevention Control and Countermeasures plans, compliance with monthly inspection requirements, improper outdoor material storage, conducting required good housekeeping measures, documentation of catch basin cleaning, and labeling hazardous material storage areas.*

Measureable Goals:

1. Conduct Annual Inspections at Priority Facilities.
   - ✓ *Complete for FY2014. (See Tracking Measures response above).*
2. Document the procedure and rationale for selection of "Priority Facilities" by 11/1/2011.
   - ✓ *Previously completed and reported (FY2011).*

7.1.3 Element #3: Construction Site Runoff Control

Construction projects on Port property comply with the MS4 permit's runoff control requirements through compliance with the NPDES 1200-CA Permit (for Port operations), NPDES 1200-C permits (for tenant projects) as required by DEQ, or the City of Portland's erosion control ordinance (for smaller tenant projects). In addition, these requirements are incorporated into contracts to the extent construction site operators are performing work for the Port. Therefore, control of construction site runoff is addressed independently from the Port's SWMP. Coverage for Port operations and tenants is outlined in Table 1.

7.1.4 Element #4: Education and Outreach

BMP: Implement Public Education Measures to Protect Stormwater Quality

Implementation Tasks:

1. During inspections conducted under BMP – "Implement Inspections of Significant Pollutant Source Areas", and BMP – "Implement a Stormwater System Cleaning and Maintenance Program", identify catch basins where it would be relevant and appropriate to apply "Dump No Waste, Drains to Stream" decals and apply decals (Responsibility: MFM, PDX Maintenance).
2. Include stormwater education materials at Port sponsored outreach events (Responsibility: Public Affairs).

Tracking Measures:

1. Track the number of "Dump No Waste, Drains to Stream" decals applied to catch basins.
   - ✓ *The Port applied 275 decals in FY2014.*
2. Track events where stormwater educational materials were made available.
   - ✓ *Seaport Celebration (Environmental Programs booth) - August 2014*
   - ✓ *Columbia Slough Regatta – July 2014*
   - ✓ *GoGreen Conference display boards - October 2014*
   - ✓ *Deicing stormwater treatment facility tours (12 tours – approx. 45 people)*
   - ✓ *HQ sustainability tours - 18*

Measureable Goals:

1. "Dump No Waste, Drains to Stream" decals will be applied to catch basins associated with all new Port construction annually (with the exception of FAA restricted areas).
   - ✓ **See the tracking measure response above.*
2. Provide stormwater education materials at outreach events.
   - ✓ *The Port continues to address stormwater issues in a broad variety of outreach events. The details are presented in the tracking measure response above. Moving forward, the Port intends to maintain some outreach to the general public at events. However, our primary focus will be on outreach to industrial/commercial tenants since the Port's jurisdiction does not include any residential property. Education and outreach modules addressing target pollutants are in development for this target audience.*

BMP: Implement a Tenant Stormwater BMP Program

Implementation Tasks:

1. Maintain an inventory of all tenants or lease holders (Responsibility: Environmental Operations).
2. Provide technical assistance to the tenants regarding structural and non-structural/ source control stormwater BMPs (Responsibility: Environmental Operations).
3. Maintain an active property management role by conducting inspections of property vacated by tenants to ensure proper disposal of waste materials (Responsibility: Environmental Operations, Aviation and Marine Properties Management).

Tracking Measures:

1. Compile/ update a leasehold inventory annually.
   - ✓ *Marine, Aviation, and Industrial Development Properties groups provide an updated list of leaseholders annually. Tenant information is also updated on its own GIS layer within PortGIS, through a separate process. However, many of these leaseholds do not have any significant exposure to stormwater. Operating area environmental staff are familiar with the circumstances and needs of specific leaseholders. This information is taken into consideration when selecting priority facilities for inspection.*

2. Provide technical information related to structural and non-structural/ source control BMPs to tenants over the permit term.
   - ✓ *In FY2014, this was done during the Port's Priority Facility Inspections. *See issues addressed under BMP: Implement an Inspection Program for Significant Pollutant Source Areas (pg. 19). The Port is developing stormwater BMP education and outreach modules targeting industrial properties. These will be used in conjunction with the industrial inspection program and distributed to a larger group of industrial/commercial entities within the Port's jurisdiction.*

Measureable Goals:

1. Verify the completion and/ or update of a leasehold inventory.
   - ✓ *Completed in FY2014. *See tracking measure response above.*
2. Track technical assistance documentation provided to tenants.
   - ✓ *Technical assistance was provided on all stormwater issues encountered during priority facility inspections. *See a list of issues under BMP: Implement an Inspection Program for Significant Pollutant Source Areas (pg. 19).*

3. Describe property management activities for lease termination inspections.
   - ✓ *Inspections include a number of different areas including stormwater. The stormwater portion is focused on determining if the condition of the vacated property presents a source of potential stormwater contaminants. Any sources are identified and mitigated by the former tenant or by the Port and billed back to the responsible party. This means cessation of activities exposed to stormwater, such as outdoor storage. The stormwater system is surveyed and the tenant is asked to*

clean the catch basins if necessary. Sweeping or clean-up of surface staining can also be requested before a tenant is released from the lease.

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

Implementation Tasks:

1. Require all pesticide applicators to obtain and maintain licenses issued by the Oregon Department of Agriculture (ODA) (Responsibility: PDX Maintenance, PDX Landscape, Marine Properties Maintenance, MFM).

Tracking Measures:

1. Track the Port employees who are ODA-licensed pesticide applicators.
   - ✓ *The following Port employees are ODA-licensed; Tim Cooper, Mark Griffith, Dustin Sandberg, Luis Guevara, Marco Guevara, Kevin Pack, Ryan Snow, Joe Harris, Lyle Larson, Corrine Fritz, Don Goodman, Shawn Groom, Tim Guymon, Andrew Glass and Michael Sands.*

Measureable Goals:

1. All pesticide applicators will be licensed by the ODA.
   - ✓ *All pesticide applicators working on Port-operated properties are licensed by the ODA. This includes five groups within the Port operating areas who work with these materials (PDX Maintenance, PDX Landscape, Marine Facilities Maintenance (MFM), Marine Property Maintenance/Landscape and Environmental Operations Natural Resources).*

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

Implementation Tasks:

1. Provide annual erosion prevention and sediment control training for all Port construction inspectors (Responsibility: Environmental Operations).

Tracking Measures:

1. Track the number of employees receiving erosion and sediment control training.
   - ✓ *The Port provided a one hour training session to 12 staff members involved in construction inspection activities for Port projects. Staff trained through this process inspects projects regulated under the Port's 1200-CA permit.*

Measureable Goals:

1. Erosion prevention and sediment control training will be conducted annually for Port construction inspectors.
   - ✓ *Completed in FY2014. *See the tracking measure response above.*

BMP: Participate in a Public Education Effectiveness Evaluation

Implementation Tasks:

1. Coordinate with other local, Phase I jurisdictions in providing/ compiling information regarding a public education effectiveness evaluation by November 1, 2014 (Responsibility: Environmental Operations).

Tracking Measures:

1. Track related efforts annually.

   ✓ *Completed in October 2014. The Port participated in a DEQ approved project with other Phase I jurisdictions to conduct a large scale Public Education Effectiveness Evaluation. The effort was spearheaded by the Association of Clean Water Agencies (ACWA).*

Measureable Goals:

1. Coordinate with other local, Phase I jurisdictions regarding a public education effectiveness evaluation by November 1, 2014.

   ✓ *Completed in October 2014.*

BMP: Implement a Spill Response Training Program

Implementation Tasks:

1. Distribute updated emergency contact information and spill response procedures to employees responsible for responding to spills (Responsibility: Environmental Operations).
2. Conduct general spill response training annually for designated employees (Responsibility: Environmental Operations).

Tracking Measures:

1. Document spill response training activities.

   ✓ *Environmental Operations maintains documentation listing operations area personnel receiving annual spill response training. The criteria used to determine which employees receive training are explained under the second measurable goal below.*

Measureable Goals:

1. Annually train designated Port employees on spill response.

   ✓ *Spill response training was provided for 72 employees at Marine facilities*

   ✓ *Spill response training was provided for 106 employees at Aviation facilities*

2. Document the procedure to determine which employees will receive spill training by November 1, 2011.

   ✓ *Previously completed (FY2011).*

BMP: Implement a Staff Training Program for Stormwater Pollution Prevention

Implementation Tasks:

1. Continue to conduct training for new employees during their orientation (Responsibility: Public Affairs).
2. Provide targeted annual stormwater pollution prevention training for specific staff that conducts activities relevant to stormwater (Responsibility: Environmental Operations).
3. Port staff to attend conferences and educational presentations (Responsibility: Environmental Operations and).

Tracking Measures:

1. Document all staff training activities.
   - ✓ *Environmental Operations maintains documentation for all annual stormwater training provided to existing employees, as well as the new employee stormwater training provided during orientation. The Port provided stormwater pollution prevention training to 178 existing employees and 72 new employees during FY2014.*
2. Document attendance at conferences.
   - ✓ *Environmental Operations collects documentation of stormwater-related conferences attended by environmental staff. These conferences ensure Port staff is up to speed on relevant implementation, technology, and regulatory issues (examples may include, StormCon, NEBC Industrial Stormwater Conference, CASQA Stormwater Conference, Northwest Environmental Conference, and various stormwater related training courses).*

Measureable Goals:

1. Participate in water quality organizations and stakeholder groups annually.
   - ✓ *The Port continues to participate as a board member of the following organizations, Columbia Slough Watershed Council, Solve, Lower Columbia Estuary, and Willamette Partnership. Other participation includes financial sponsorship, membership, volunteer assistance at events, and in-kind services for the following stakeholder groups, Oregon Environmental Council, Oregon Association of Clean Water Agencies, Intertwine Alliance, Columbia Riverkeeper, Willamette Riverkeeper, and PDX Community Advisory Committee.*
2. Conduct annual training.
   - ✓ *Completed in FY2014. *See the tracking measure response above.*
3. Conduct new employee training.
   - ✓ *Completed in FY2014. *See the tracking measure response above.*

7.1.5 Element #5: Public Involvement and Participation:

BMP: Provide for Public Participation with SWMP and Benchmark Submittals

Implementation Tasks:

1. Provide opportunities for public comment on the SWMP and pollutant load reductions benchmarks for a minimum of 30 days prior to submittal of the permit renewal to DEQ (Responsibility: Environmental Operations and Public Affairs).

Tracking Measures:

1. Report annually on public participation in these areas.
   - ✓ *Port's Stormwater Management Plan and the Pollutant Load Reduction Benchmark Analysis report were updated as part of the MS4 permit renewal application and put on Public notice via the Portland website June 15 through July 15, 2015.*

Measureable Goals:

1. Provide for public participation on the SWMP revisions and pollutant load reduction benchmarks (developed for permit renewal).
   - ✓ *See the tracking measure response above.*
2. Provide public access to the Port's most current MS4 Annual Report via its public website.
   - ✓ *The Port's annual reports are available on-line via a link (on the "Stormwater Management Page" of the Port's public website) to the City of Portland's website http://www.portlandonline.com/bes/index.cfm?c=50289 and are also posted on the Port's website, http://www2.portofportland.com/Inside/StormwaterManagement.*

BMP: Implement a Public Participation Approach that Provides Opportunities for the Public to Effectively Participate in the Implementation of the Stormwater Management Plan

Implementation Tasks:

1. Determine what projects are appropriate for public involvement (Responsibility: Environmental Operations, Public Affairs).
2. Make the public aware of the selected involvement opportunities via the Port's website, and the Columbia Slough Watershed Council (Responsibility: Environmental Operations and Public Affairs).
   - ✓ *In FY2014, the public was made aware of involvement opportunities via communications from the Environmental Outreach Coordinator using the website, email, and the Port's online newsletter, Port Currents.*
3. Implement selected projects and document public involvement (Responsibility: Environmental Operations and Public Affairs).

Tracking Measures:

1. Describe any projects implemented where the public has opportunity to participate and the extent of public involvement for each.

- ✓ *The following FY2014 events provided the opportunity for the public to participate in implementation of the Port's stormwater program:*
  - *Sponsor of 2014 Columbia Slough Regatta (July 2014),*
  - *Sponsored 2014 SOLVE Beach & Riverside Cleanup weekend (Sept 27, 2014),*
  - *Sponsored six Friends of Trees plantings (2014),*
  - *Honoring Our Rivers – sponsorship and in-kind support of student anthology of writing and art works focusing on rivers; served as judge for student work.*

Measureable Goals:

1. Document what projects are identified as public involvement opportunities.
   - ✓ *The following have been identified as possibilities for next year:*
     - *Provide for opportunity for tenants to give feedback on education materials developed for stormwater best management practices.*

7.1.6 Element #6: Post-Construction Site Runoff Control

BMP: Develop, Adopt, and Implement New Port-Specific Post-Construction Runoff Control Standards

Implementation Tasks:

1. By January 1, 2014, adopt and implement Port-wide post-construction standards for development and redevelopment. Airport specific standards will be consistent with FAA and airport operations requirements (Responsibility: Environmental Operations)
2. By December 2012, update Intergovernmental Agreement (IGA) with the City of Portland to clarify responsibilities, so that one set of post-construction standards are applied to the Port's MS4, avoiding duplication and conflicting requirements (Responsibility: Environmental Affairs).
3. By end of permit term, design and initiate construction on a stormwater capital improvement retrofit to address at least one applicable TMDL pollutant of concern (Responsibility: Environmental Operations).

Tracking Measures:

1. Adopt Port-wide post-construction development/ redevelopment standards by January 1, 2014.
   - ✓ *The Port's Design Standards Manual (DSM) was completed November 2013.*
   - ✓ *The Port's DSM is currently applies to the PDX airfield and certain designated properties surrounding the airfield. The DSM allows for the use of regional structures to treat multiple capital projects.*
     - *The Port is currently working on system to track the number of acres treated and the total number of acres requiring treatment per fiscal year.*
     - *Due to Federal Aviation Administration (FAA) requirements the Port manages the airport from a landside and airside perspective where airside is defined as the geographical portion of the airport within the airfield security fence and landside is the area outside the security fence.*
     - *The Port has a capital project planned to install a large regional treatment structure in PDX drainage basin 8 to treat stormwater from landside projects*

completed in 2014 and 2015. The regional structure was sized to provide treatment for multiple projects with additional capacity for future projects. The estimated completion date for the regional structure is fall of 2016.

- *The Port has not constructed treatment for projects completed in 2014 and 2015 on the airside. The total number of acres requiring treatment for these Port capital projects is unknown; the Port is currently in the process of quantifying the deficit and determining the schedule for constructing treatment.*

- *The Port developed a Storm Water Master Plan for PDX which was started in 2013 and completed in June 2015; this plan provides recommendations to inform planning and development decisions for regional treatment based on a 20-year view of the Port's capital improvement program (CIP).*

  - *The Port is currently evaluating the storm water master plan information in the context of the CIP and determining a schedule and funding to move forward with regional treatment to fulfill the MS4 permit requirement.*

✓ *The Port has developed a Corrective Action Plan (CAP) for this issue. The Port's Environmental Management System (EMS) will document the actions taken and the timeline to complete these actions.*

- *The CAP states that the Port will develop a prioritized list of regional treatment structures; obtain business line approval; develop charters/business cases; and design and build structures according to plan to bring the Port into compliance with the MS4 permit.*

2. Update IGA with the City of Portland by December 31, 2012.

✓ *Completed by December 2012.*

4. Design and initiate construction on a stormwater retrofit project to address a TMDL pollutant of concern.

✓ *A pavement removal project at Terminal 4 was identified as the Port's required retrofit project and completed in FY2012. It removed 1.24 acres of impervious area, and six catch basins. Thereby, infiltrating an estimated 3.6 acre feet of stormwater annually and reducing potential bacterial loading to the Willamette River.*

<u>Measureable Goals:</u>

1. Document the design, construction, and rationale for the retrofit project addressing a TMDL pollutant of concern.

✓ **See the third tracking measures response.*

7.1.7 Element #7: Pollution Prevention for Municipal Operations

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

Implementation Tasks:

1. Sweep the McCarthy Park (Swan Island) parking lot annually (Responsibility: Marine Properties Maintenance).
2. Sweep Port-managed areas of the marine terminals annually. If additional sweeping is needed, Environmental Operations will coordinate with MFM staff (Responsibility: Environmental Operations, MFM).
3. Sweep Airport Way, Frontage Road, and PDX employee parking lots twice per week in winter and once per week in summer (Responsibility: PDX Maintenance).
4. Maintain and repair roadway areas to minimize pollutant impacts to stormwater as needed (Responsibility: MFM, PDX Maintenance).
5. Follow manufacturer's recommendation for application of deicing products (Responsibility: MFM, PDX Maintenance, Marine Properties Maintenance).
   - ✓ *Operating area personnel apply pavement deicing materials per the manufacturer's requirements. Application equipment is calibrated by weight and volume to apply the material at the suggested rate in order to avoid over application.*
6. As necessary, decant street sweeping wastes in covered, water-tight drop boxes (Decant Water Collection Boxes) that drain to an approved sanitary sewer discharge point (Responsibility: PDX Maintenance, MFM).
   - ✓ *Completed for FY2014*

Tracking Measures:

1. Track sweeping frequency at McCarthy Park.

✓ *MFM contracts sweeping for McCarthy Park. Sweeping was conducted twice per month during the summer and spring and was increased once per week in the fall and winter.*

2. Track sweeping frequency at the marine terminals.
   - ✓ *Annual environmental sweeping was conducted at Terminals 2, 4, and 6 monthly between July and March. The T6 601 yard and Auto West yard were swept twice.*
3. Track sweeping frequency at Airport Way, Frontage Road, and the PDX employee parking lots.
   - ✓ *PDX Maintenance performs regular sweeping for these areas.*
4. Report the amount of materials removed. Materials will include those collected from catch basins and other structural devices.
   - ✓ *297.6 tons of material were removed from catch basins and sweeping combined at Aviation facilities during FY2014. The PDX Basin 2 quiescent pond was also cleaned, resulting in the removal of an additional 53.6 tons of sediment.*
   - ✓ *59.3 tons of material were removed from catch basins and sweeping combined at Marine facilities during FY2014.*

Measureable Goals:

1. Sweep McCarthy Park parking lot annually.
   - ✓ *Completed in FY2014. *See tracking measure response above.*
2. Sweep Port-managed, accessible areas of the marine terminals annually.
   - ✓ *Complete in FY2014. *See tracking measure response above.*
3. Sweep Airport Way, Frontage Road, and the PDX employee parking lots a minimum of once per week.
   - ✓ *Completed in FY2014. *See tracking measure response above.*

BMP: Limit Landscape Maintenance Activities Impact on Stormwater

Implementation Tasks:

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

     Environmental Operations provides Port maintenance staff and Port-contracted workers with the Vegetation Management Plan. The plan gives information on the appropriate herbicides and use of those herbicides to control particular invasive plant species, and it identifies the locations where specific herbicides can be applied.

     MFM conducts weed control activities at marine parking areas, rail yards, and specific vegetated areas at Marine Terminals 2, 4, and 6 on an as-needed basis.

     PDX Landscape staff, responsible for landscaping at PDX facilities, continues to implement BMPs aimed at improving stormwater quality at the airport. Some of the issues they focused on included testing pesticide alternatives recommended by the Oregon Department of Agriculture, reducing the concentration of pesticides/herbicides/fertilizers applied where possible, and incorporating native plants into the landscaping to reduce water and chemical requirements.

     PDX Maintenance staff applies pesticides on the airfield to comply with FAA requirements. They continue to look for ways to reduce chemical usage where possible by working with different pesticide combinations to achieve required conditions.
2. Review the Port's program to control pesticides, herbicides and fertilizers annually, and update as appropriate (Responsibility: Environmental Operations, Marine Properties Maintenance, MFM, PDX Maintenance, PDX Landscape).
   - ✓ *The Port groups applying landscape chemicals documented new approaches considered during FY2014. Some of the issues include: Calibrating equipment, pollinator health, buffers for stream barring salmonid and invasive inspects.*
3. Maintain an inventory of pesticides used on Port property and update annually (Responsibility: Environmental Operations).

Tracking Measures:

1. Document the annual pesticide use update.
   - ✓ *The amounts of each pesticide/herbicide/fertilizer used are presented below for each of the groups listed above.*

Table 3 Pesticide/Herbicide/Fertilizer Use

PDX Landscape Maintenance	
Atrimmec Growth Regulator	6.5 gal
T Zone, Turf Weed Herbicide	1.48 gal
Dimension 2EW, Pre-emergent Herbicide	1.90 gal
Lontrel, Herbicide	1.25 oz
Casaron, Herbicide	2 Lbs
Triclopir 3A, Herbicide	2.5 gal
Ranger Pro Herbicide	10.67 gal
Surflan AS, Pre-emergent herbicide	24.5 gal
ZP/AG Oats Bait	431 grams
Pendulum AquaCap	24.5 gal
PROkoZ Surflan	24.5 gal
Sim-Trol	26 gal
Omni Supreme	96 oz
NU-COP 50 DF	1 Lbs
Prozap Zinc Phosphide 2% rodonticide	211 grams
PDX General Maintenance	
Alligare	372 lbs
Parrott 4L	124 gal
Crossroads	10.75 gal
Ranger Pro	30 gal
ZP Oats (Vole bait)	8,000 lbs
Blue Dye (inert)	1.8 gal
No Foam (inert)	60 oz
Undeveloped Properties	
Element 3A	2037.8 oz
Roundup Custom Pro	350.25 oz
Capstone	439 oz
Rodeo	272 oz
Milestone	18.6 oz

Marine Property Landscape Maintenance	
Ranger Pro	5449.50 oz
AquaStar	2021.5 oz
TriChlophr 3/A	3690 oz
Surflan Pro	1740 oz
Dimension 2 EW	256 oz
T-Zone	12 oz
Square One	82 oz
Spectical	560 oz
Ornamec	7.5 oz
Simazine 4L	304 oz
Power Zone	31 oz
Sulfomet	24 oz
Milestone	16 oz
Sulfomet	24 oz
Agri Star Triclopyr 3A	59.5 gal
Marine Facility Maintenance	
Ranger Pro	57 gal
SFM 75	171 oz
Sulfomet	30 oz
LI-700 Surfactant	18.5 gal

Measureable Goals:

1. Annually update the Port's pesticide use inventory.
   - ✓ *Completed for FY2014. *See list above.*

BMP: Require Training and Licensing for Staff Conducting Pest Management Activities (partial applicability)

*See section 7.1.4 for information on implementation of this BMP.

BMP: Implement a Tenant BMP Program (partial applicability)

* See section 7.1.4 for information on implementation of this BMP.

BMP: Implement a Program to Limit Infiltration from Port-Owned Sanitary Sewer System into the MS4

Implementation Tasks:

1. Monitor pump stations electronically to ensure proper function of Aviation pump stations (Responsibility: PDX Maintenance).
2. Monitor pump stations through weekly inspections and audible/visual alarms to ensure proper function of Marine pump stations (Responsibility: MFM).
   - ✓ *MFM staff documented weekly inspections for FY2014. The MFM plumber and electricians contribute to meeting this requirement.*
3. Conduct annual pump station maintenance, including flushing, float and alarm testing, and debris removal for all pump stations (Responsibility: PDX Maintenance, MFM).
   - ✓ *Work orders were generated to ensure the completion of this work at PDX and Marine operated sanitary lift stations.*
4. Clean Port-owned grease interceptor vaults at PDX on an annual basis (Responsibility: Aviation Facilities Maintenance).
   - ✓ *PDX maintains two large grease interceptor vaults as a back-up to grease traps maintained by PDX concessions tenants under the FOG program. Documentation of this maintenance is provided to*
5. Continue to implement the tenant FOG (fats/oils/grease) program to ensure proper handling of these materials at PDX (Responsibility: PDX Business/Properties).

Tracking Measures:

1. Maintain a list of Port tenants implementing the FOG program.
   - ✓ *Environmental Operations maintains a list of tenants who are inspected as part of the effort to prevent fats, oil, and grease from clogging sanitary sewer lines. These are primarily concessions tenants located in the terminal. This relates to stormwater, as it prevents overflow in obstructed sanitary lines from entering the storm system.*

Measureable Goals:

1. Document completion of implementation tasks (2-4) associated with this BMP (with PDX Maintenance, Aviation Facilities Maintenance, MFM, and PDX Business/Properties)

   ✓ *Completed for FY2014. Environmental Operations maintains documentation for the lift station inspections/maintenance, grease vault cleaning and grease trap inspections (FOG program).*

BMP: Implement a Stormwater System Cleaning and Maintenance Program (partial applicability)

* See section 7.1.8 for information on implementation of this BMP.

7.1.8 Element #8: Structural Stormwater Controls Operations and Maintenance

BMP: Implement a Stormwater System Cleaning and Maintenance Program

Implementation Tasks:

1. Continue to implement a stormwater system feature inspection and maintenance program (Responsibility: Environmental Operations, MFM, Marine Properties Maintenance).
2. Inspect and clean catch basins (as necessary) annually in Port-managed Marine Business Line areas (Responsibility: MFM).
3. Conduct litter pickup and vegetation management activities to ensure adequate access and performance of all stormwater system features as needed (Responsibility: MFM, Marine Properties Maintenance).

   ✓ *Marine Properties Maintenance staff maintained landscaped areas within the industrial parks at Swan Island and Rivergate and at the marine terminals. Crews removed and disposed of vegetative debris, scrap metal, and garbage. They also cleared vegetation around stormwater outfalls and associated stormwater conveyance system infrastructure on Port-owned industrial park properties to provide better access for inspections and illicit discharge monitoring.*

4. Coordinate updates of storm sewer system maps to include updated stormwater conveyance system features and Port-owned and operated structural controls (Responsibility: Environmental Operations).
5. By June 30, 2012, review and update the existing inspection and maintenance procedures for structural stormwater controls, in accordance with requirements outlined in the Port's MS4 NPDES permit (Responsibility: Environmental Affairs).

   ✓ *Previously completed (FY2011)*

6. As necessary, decant storm system and catch basin cleaning wastes in covered, water-tight drop boxes (Decant Water Collection Boxes) that drain to an approved sanitary sewer discharge point (Responsibility: MFM, PDX Maintenance).

   ✓ *Completed for FY2014.*

Tracking Measures:

1. Track number of catch basins cleaned annually.
   - ✓ *830 catch basins were cleaned at Aviation facilities in FY2014.*
   - ✓ *49 catch basins were cleaned at Marine facilities in FY2014.*
2. Track cleaning frequency for the Port owned and operated structural stormwater controls by facility type.
   - ✓ *Marine-operated water quality treatment facilities are inspected at least on a quarterly basis and cleaned as needed to maintain proper operation. Catch basins in Marine-operated areas are scheduled to be inspected and cleaned (if necessary) on an annual basis.*
   - ✓ *Aviation-owned water quality treatment facilities (with the exception of quiescent ponds) are cleaned on an annual basis. The ponds are cleaned on a rotating basis. Basin 2 pond was cleaned in FY2014, resulting in the removal of 53.6 tons of material.*
   - ✓ *PDX has over 3,000 catch basins. PDX Maintenance inspects and cleans those associated with industrial activity on an annual basis. Many of these facilities also have catch basin inserts that are inspected and changed as needed on a monthly basis. The balance of PDX catch basins are cleaned on a 4-year rotating basis. If necessary, catch basins are moved to a more frequent cleaning schedule or fitted with an insert based on field observations.*
3. Track storm sewer system pipe cleaning activities annually.
   - ✓ *25,942 feet of storm line were cleaned at Aviation facilities during FY2014.*
   - ✓ *16, 243 feet of storm line were cleaned at the Marine and Industrial properties in FY2014.*
4. Track updates to the stormwater system features maps.
   - ✓ *All Port storm system maps are available to operations and administrative personnel through the PortGIS interphase located on Navigator (the Port's intranet). The PortGIS system is continuously updated.*
5. Report amount of materials removed. Materials will include those collected from catch basin cleaning and street sweeping.
   - ✓ **See BMP: Implement a Street and Vehicle Maneuvering Area Cleaning and Maintenance Program.*

Measureable Goals:

1. Inspect and clean all catch basins within the Port-managed areas not otherwise covered by a 1200-series industrial stormwater permit annually.
   - ✓ *PDX completed this work based on their schedule (listed above under tracking measure for this BMP).*
   - ✓ *MFM completed this work in FY2014.*

2. Inspect and maintain all Port-owned and operated structural controls within the Port-managed areas not otherwise covered by a 1200-series industrial stormwater permit annually.

   ✓ *Completed in FY2014. (See the Tracking Measure response above).*

BMP: Implement a Program for the Tracking and Maintenance of Private Structural Controls

Implementation Tasks:

1. Work with the City of Portland to establish and maintain an inventory of existing private structural control facilities on tenant properties by December 31, 2012 (Responsibility: MID Properties Management, and Environmental Operations).
2. Develop a program in conjunction with the City of Portland to track private structural control facilities on tenant properties over the permit term (Responsibility: Environmental Operations).
3. By June 30, 2012, develop an updated inspection and maintenance procedure for structural stormwater controls for distribution to owners of private structural control facilities (Responsibility: Environmental Operations).

Tracking Measures:

1. Track the number of existing and new private structural control facilities installed on Port-properties.

   ✓ *The Port coordinated with the City of Portland to develop a complete list of water quality treatment facilities on Port property that includes tenant operated facilities.*

Measureable Goals:

1. Develop an inventory and mechanism for tracking of private structural controls on tenant properties.

   ✓ *The Port's IGA with the City of Portland (completed in December 2012) addresses the tracking requirements. The City will cover all water quality treatment facility maintenance tracking for Port tenants outside of the PDX security fence through its Maintenance Inspection Program. The Port will track all remaining facilities on Port property.*

BMP: Implement a Tenant BMP Program (partial applicability)

* See section 7.1.4 for information on implementation of this BMP.

8.0 Adaptive Management Process Implementation and Proposed SWMP changes

As it has, since permit year one, the Port continues to use adaptive management to modify and improve BMPs and to implement practices that reduce pollutant loading to the maximum extent practicable. This process involves direct coordination with operating area personnel who provide suggested BMP modifications.

In permit year 20, an adaptive management process was used to ensure all ideas are heard, documented, and implemented, if viable. The process identified the need for two new biannual PMs, one to the PDX MX facility catch basin inserts and the other for replacing oil booms at the PDX outfalls. Two new spill kits were added to T2.

The Port is not seeking SWMP revisions at this time.

Appendix A:
Port of Portland Monitoring Objective Matrix

Stormwater Program Monitoring Component	Monitoring Component Description	MS4 Monitoring Objectives					
		i. Evaluate the sources of the 2004/2006 303(d) listed pollutants as applicable.	ii. Evaluate the effectiveness of BMPs in order to help determine BMP implementation priorities.	iii. Characterize MS4 runoff discharges based on landuse, seasonality, geography or other catchment characteristics.	iv. Evaluate long-term trends in receiving waters associated with MS4 stormwater discharges.	v. Assess the chemical, biological, and physical effects of MS4 discharges on receiving waters.	vi. Assess progress towards meeting TMDL pollutant load reduction benchmarks.
Environmental Monitoring Activities							
Environmental Monitoring	*Instream Monitoring (field, conventional, metals, nutrients)	Includes many TMDL and a few 303(d) listed pollutants (some are monitored using surrogates, such as TSS). Many 303(d) listed pollutants are listed for media other than surface water.	Data can be used to evalutate the overall effectiveness of BMP's in combination with basic stormwater monitoring.	Provides information to support the evaluataion and comparison of in-stream concentrations during dry and wet weather. This information will support the characterization of MS4 discharges.	Comprehensive monitoring program with other permittees where appropriate. The plan includes in-stream pollutant monitoring during dry and wet season at locations and frequencies according to the plan criteria.	Instream monitoring will provide information to assess the chemical and physical effects of MS4 runoff on receiving waters.	Instream monitoring will provide information regarding progress towards meeting pollutant load reduction benchmarks and TMDL waste load allocations.
	*Continuous Instream Monitoring (flow, temperature)	Flow monitoring in combination with temperature at most locations and turbidity as some locations will allow for the evalutation of some 303(d) listed pollutants or their surrogates.	Data can be used to evaluate the overall effectiveness of BMPs in removing sediment loads where (turbidity data is collected)	Provides information to support the evalutation and comparison of in-stream concentrations during dry and wet weather. This information will support the characterization of MS4 discharges.	Continuous instream monitoring provides data to support the evaluation of status and trends associated with MS4 discharges.	Continuous instream monitoring provides data to help assess physical effects in the lower Columbia Slough.	Continuous instream monitoring provides flow data to help assess pollutant loads in the lower Columbia Slough.
	*Stormwater Monitoring (field, conventional, metals, nutrients)	Stormwater monitoring will provide information to evaluate what influences stormwater quality.	Stormwater monitoring will provide general information to support the evaluation of the overall effectiveness of BMPs to reduce pollutants in the monitored catchment.	Comprehensive monitoring program to answer very specific questions to evlauate stormwater pollutant concentrations.	Stormwater monitoring will assist in the interpretation of in-stream trend analysis.	Stormwater monitoring will assist in the interpretation of in-stream water quality concerns and will be used to evaluate potential impacts.	Stormwater monitoring will provide information (improved land use concentrations; answers to specific questions) for use in the pollutant loads model.
	*Pesticide Monitoring (Stormwater)	Stormwater pesticide monitoring provides information to evaluate what pesticides are of concern and general information on types of sources.	Stormwater pesticide monitoring will provide information to support the evaluation of the overall effectiveness of BMP to reduce pollutants in the monitored catchment.	Comprehensive monitoring program to potentially answer very specific questions to evaluate stormwater pesticide concentrations.	N/A, since no in-stream pesticide monitoring is planned during this permit cycle.	Pesticide monitoring will assist in the interpretation of in-stream water quality data concerns and will be used to evaluate potential impacts.	N/A, since no TMDLs for current use pesticides are in place.
	*Mercury Monitoring (Stormwater)	Mercury monitoring in stormwater will allow the quantification of mercury loads from the MS4 system to streams in preparation of the development of a mercury TMDL.	Mercury monitoring will provide information to support the evaluation of the overall effectiveness of BMPs to reduce mercury in the monitored catchment.	Mercury monitoring will charaterize the discharges of mercury from large MS4 catchments.	N/A, since no in-stream mercury monitoring is planned during this permit cycle.	Mercury monitoring will assist in the interpretation of in-stream water quality data collected by others and will be used to evaluate potential impacts.	N/A, since no TMDLs for mercury are in place and no TMDL benchmarks have been set.
	*Macroinvertebrate Sampling	Macroinvertebrate sampling will provide information to support identification of types of pollutants and pollutant sources.	Provides and assessment of overall improvements made using multiple BMPs.	Indirectly provides information to support the characterization of MS4 runoff discharges based on land use type, seasonality and/or geography.	Provides information to support the evaluation of trends in receiving waters and allows for trending as an independent measure.	Provides information to help assess biological effects on MS4 receiving waters.	Macroinvertebrate IBI may contribute to the asssessment of progress toward meeting TMDL WLAs in general terms.
Other Stormwater Program Monitoring Activities							
Best Management Practice Monitoring	Measurable goals and tracking measures for Port BMPs.	SWMP BMP monitoring does not address this objective.	SWMP BMP monitoring may help evaluate effectiveness of source controls/non-structural BMPs.	SWMP BMP monitoring does not address this objective.	SWMP BMP monitoring does not address this objective.	SWMP BMP monitoring does not address this objective.	SWMP BMP monitoring does not address this objective.
Dry-weather Field Screening	Inspect the Port's Priority outfalls annually during the dry weather season.	Based on results of inspection and monitoring (if applicable), may identify potential illicit discharges of 303(d) pollutants.	Dry-weather field screening does not address this objective.	Dry-weather field screening does not address this objective.	Dry-weather field screening does not address this objective.	Dry-weather field screening does not address this objective.	Dry-weather field screening does not address this objective.
Industrial Stormwater Permit Monitoring (1200-Z and 1200-COLS)	Required sampling for the Port's specific industrial facilities.	Results may help determine potential sources of 303(d) listed polutants.	Outfall sampling results may indicate if existing BMPs are effective for 303(d) and industrial permit parameters.	Sampling results can be used to help characterize runoff from industrial lands.	Industiral stormwater monitoring does not address this objective.	Industiral stormwater monitoring does not address this objective.	Industiral stormwater monitoring does not address this objective.
Pollutant Load/ WQ Modeling	Modeling per Columbia Slough and Willamette River TMDL to evaluate overall pollutant loads and BMP effectiveness.	Pollutant Loads Modeling does not address this objective.	Results indicate overall effectiveness of structural BMPs, estimate effectiveness of non-structural BMPs, and determine locations of high pollutant load generation (for future BMP implementation).	Pollutant load modeling provides estimated MS4 runoff discharge characteristics (by land use based on land use event mean concentration data used in modeling).	Pollutant loads modeling does not address this objective.	Pollutant loads modeling does not address this objective.	Pollutant load modeling allows for development of new benchmarks and assessment of progress towards meeting existing benchmarks.
Intergovernmental coordination efforts	Continued participation with other agencies and groups (i.e., ACWA).	Participation may provide further information related to potential sources of 303(d) pollutants.	Participation may provide further information related to BMP effectiveness.	Participation may further inform the MS4 discharge characterization.	Intergovernmental coordination does not address this objective.	Participation may further assess chemical, physical, and biological effects.	Participation may provide further information related to progress towards meeting TMDL WLA and associated benchmarks.

*Element of the City of Portland MS4 monitoring program, which the Port participates in via IGA.

Appendix B Analytical Results

Specialty Analytical

11711 SE Capps Road, Ste B
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

September 04, 2014

Danelle Peterson
Port of Portland
PO BOX 3529
Portland, OR 97208

TEL: (503) 460-4722
FAX (503) 460-4588
RE: PDX IDDE

Dear Danelle Peterson: Order No.: 1408163

Specialty Analytical received 3 sample(s) on 8/25/2014 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

Specialty Analytical

Date Reported: 04-Sep-14

CLIENT: Port of Portland
Project: PDX IDDE

Lab Order: 1408163

Lab ID: 1408163-001 **Collection Date:** 8/25/2014 2:04:00 PM
Client Sample ID: PDX-B8-SP8A-082514-1404 **Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
TOTAL RESIDUAL CHLORINE		**M4500-CL B**				Analyst: **EFH**
Chlorine, Residual	0.0818	0.0100	HT	mg/L	1	8/25/2014 4:15:08 PM
AMMONIA AS NITROGEN		**SM4500-NH3 H**				Analyst: **EFH**
Nitrogen, Ammonia (As N)	ND	0.0400		mg/L	1	8/26/2014 3:26:46 PM
SPECIFIC CONDUCTANCE		**M2510 B**				Analyst: **BW**
Conductivity	397	5.00		µmhos/cm	1	8/26/2014 10:13:14 AM

Lab ID: 1408163-002 **Collection Date:** 8/25/2014 12:35:00 PM
Client Sample ID: PDX-B4-SP4-082514-1235 **Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
TOTAL RESIDUAL CHLORINE		**M4500-CL B**				Analyst: **EFH**
Chlorine, Residual	0.0362	0.0100	HT	mg/L	1	8/25/2014 4:18:08 PM
AMMONIA AS NITROGEN		**SM4500-NH3 H**				Analyst: **EFH**
Nitrogen, Ammonia (As N)	ND	0.0400		mg/L	1	8/26/2014 3:28:46 PM
SPECIFIC CONDUCTANCE		**M2510 B**				Analyst: **BW**
Conductivity	678	5.00		µmhos/cm	1	8/26/2014 10:21:14 AM

Lab ID: 1408163-003 **Collection Date:** 8/25/2014 11:50:00 AM
Client Sample ID: PDX-B3-SP3-082514-11550 **Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
TOTAL RESIDUAL CHLORINE		**M4500-CL B**				Analyst: **EFH**
Chlorine, Residual	0.0666	0.0100	HT	mg/L	1	8/25/2014 4:19:08 PM
AMMONIA AS NITROGEN		**SM4500-NH3 H**				Analyst: **EFH**
Nitrogen, Ammonia (As N)	0.0977	0.0400		mg/L	1	8/26/2014 3:30:46 PM
SPECIFIC CONDUCTANCE		**M2510 B**				Analyst: **BW**
Conductivity	95.2	5.00		µmhos/cm	1	8/26/2014 10:25:14 AM

QC SUMMARY REPORT

WO#: **1408163**

04-Sep-14

Specialty Analytical

Client: Port of Portland
Project: PDX IDDE

TestCode: **Cl-RES**

Sample ID: **MB-R16552** SampType: **MBLK** TestCode: **Cl-RES** Units: **mg/L** Prep Date: RunNo: **16552**
Client ID: **PBW** Batch ID: **R16552** TestNo: **M4500-Cl B** Analysis Date: **8/25/2014** SeqNo: **218358**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorine, Residual	ND	0.0100									

Sample ID: **LCS-R16552** SampType: **LCS** TestCode: **Cl-RES** Units: **mg/L** Prep Date: RunNo: **16552**
Client ID: **LCSW** Batch ID: **R16552** TestNo: **M4500-Cl B** Analysis Date: **8/25/2014** SeqNo: **218359**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorine, Residual	0.176	0.0100	0.2000	0	87.8	85	115				

Sample ID: **1408163-001AMS** SampType: **MS** TestCode: **Cl-RES** Units: **mg/L** Prep Date: RunNo: **16552**
Client ID: **PDX-B8-SP8A-08251** Batch ID: **R16552** TestNo: **M4500-Cl B** Analysis Date: **8/25/2014** SeqNo: **218361**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorine, Residual	0.160	0.0100	0.1000	0.08184	78.2	80	120				SHT

Sample ID: **1408163-001AMSD** SampType: **MSD** TestCode: **Cl-RES** Units: **mg/L** Prep Date: RunNo: **16552**
Client ID: **PDX-B8-SP8A-08251** Batch ID: **R16552** TestNo: **M4500-Cl B** Analysis Date: **8/25/2014** SeqNo: **218362**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorine, Residual	0.170	0.0100	0.1000	0.08184	88.2	80	120	0.1600	6.06	20	HT

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recov

QC SUMMARY REPORT

WO#: **1408163**

04-Sep-14

Specialty Analytical

Client: Port of Portland
Project: PDX IDDE

TestCode: **NH3-N_CWA**

Sample ID: **LCS-R16564** SampType: **LCS** TestCode: **NH3-N_CWA** Units: **mg/L** Prep Date: RunNo: **16564**
Client ID: **LCSW** Batch ID: **R16564** TestNo: **SM4500-NH3** Analysis Date: **8/26/2014** SeqNo: **218476**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	3.22	0.0400	3.500	0	92.0	80	120				

Sample ID: **MB-R16564** SampType: **MBLK** TestCode: **NH3-N_CWA** Units: **mg/L** Prep Date: RunNo: **16564**
Client ID: **PBW** Batch ID: **R16564** TestNo: **SM4500-NH3** Analysis Date: **8/26/2014** SeqNo: **218477**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	ND	0.0400									

Sample ID: **R16564CCV** SampType: **CCV** TestCode: **NH3-N_CWA** Units: **mg/L** Prep Date: RunNo: **16564**
Client ID: **CCV** Batch ID: **R16564** TestNo: **SM4500-NH3** Analysis Date: **8/26/2014** SeqNo: **218483**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	2.80	0.0400	3.000	0	93.5	90	110				

Sample ID: **1408153-002BMS** SampType: **MS** TestCode: **NH3-N_CWA** Units: **mg/L** Prep Date: RunNo: **16564**
Client ID: **ZZZZZZ** Batch ID: **R16564** TestNo: **SM4500-NH3** Analysis Date: **8/26/2014** SeqNo: **218485**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	32.7	0.400	15.00	18.93	91.9	68.7	124				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recov

QC SUMMARY REPORT

WO#: **1408163**

04-Sep-14

Specialty Analytical

Client: Port of Portland
Project: PDX IDDE

TestCode: **NH3-N_CWA**

Sample ID: **1408153-002BMSD**	SampType: **MSD**	TestCode: **NH3-N_CWA**	Units: **mg/L**	Prep Date:	RunNo: **16564**
Client ID: ZZZZZZ	Batch ID: **R16564**	TestNo: **SM4500-NH3**		Analysis Date: **8/26/2014**	SeqNo: **218486**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	32.4	0.400	15.00	18.93	89.7	68.7	124	32.71	0.999	20	

Sample ID: **R16564CCV**	SampType: **CCV**	TestCode: **NH3-N_CWA**	Units: **mg/L**	Prep Date:	RunNo: **16564**
Client ID: CCV	Batch ID: **R16564**	TestNo: **SM4500-NH3**		Analysis Date: **8/26/2014**	SeqNo: **218487**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia (As N)	2.79	0.0400	3.000	0	92.9	90	110				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recov

QC SUMMARY REPORT

WO#: **1408163**

04-Sep-14

Specialty Analytical

Client: Port of Portland
Project: PDX IDDE

TestCode: SC_CWA

Sample ID: LCS-R16547	SampType: LCS	TestCode: SC_CWA	Units: µmhos/cm	Prep Date:	RunNo: 16547
Client ID: LCSW	Batch ID: R16547	TestNo: M2510 B		Analysis Date: 8/26/2014	SeqNo: 218274

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	936	5.00	1000	0	93.6	75	125				

Sample ID: 1408163-001ADUP	SampType: DUP	TestCode: SC_CWA	Units: µmhos/cm	Prep Date:	RunNo: 16547
Client ID: PDX-B8-SP8A-08251	Batch ID: R16547	TestNo: M2510 B		Analysis Date: 8/26/2014	SeqNo: 218276

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	426	5.00						397.0	7.05	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recov

KEY TO FLAGS

Rev. May 12, 2010

A	This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards
A1	This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
A2	This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
A3	The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
A4	The product appears to be aged or degraded diesel.
B	The blank exhibited a positive result great than the reporting limit for this compound.
CN	See Case Narrative.
D	Result is based from a dilution.
E	Result exceeds the calibration range for this compound. The result should be considered as estimate.
F	The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
G	Result may be biased high due to biogenic interferences. Clean up is recommended.
H	Sample was analyzed outside recommended holding time.
HT	At clients request, samples was analyzed outside of recommended holding time.
J	The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
K	Diesel result is biased high due to amount of Oil contained in the sample.
L	Diesel result is biased high due to amount of Gasoline contained in the sample.
M	Oil result is biased high due to amount of Diesel contained in the sample.
MC	Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
MI	Result is outside control limits due to matrix interference.
MSA	Value determined by Method of Standard Addition.
O	Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
Q	Detection levels elevated due to sample matrix.
R	RPD control limits were exceeded.
RF	Duplicate failed due to result being at or near the method-reporting limit.
RP	Matrix spike values exceed established QC limits; post digestion spike is in control.
S	Recovery is outside control limits.
SC	Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
*	The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

CHAIN OF CUSTODY RECORD

Page 1 of 1

Specialty Analytical
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Clackamas, OR 97015
Phone: 503-607-1331
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Contact Person/Project Manager DANIELLE PETERSON
Company PORT OF PORTLAND
Address 7200 NE AIRPORT WAY
PORTLAND OR 97218
Phone 503 415 6566 Fax —
Project No. Project Name PDX IDOE
Project Site Location OR X WA Other
Invoice To P.O. No.

Collected By:
Signature
Printed BLAKE HAMALAINEN

Signature
Printed

Turn Around Time
☒ Normal 5-7 Business Days
☐ Rush
Specify
Rush Analyses Must Be Scheduled With The Lab In Advance

For Laboratory Use
Lab Job No. 14081163
Shipped Via Specialty
Air Bill No.
Temperature On Receipt °C
Specialty Analytical Containers? Y / N
Specialty Analytical Trip Blanks? Y / N

Date	Time	Sample I.D.	Matrix	No. of Containers	Total Residual Chlorine	Ammonia	Conductivity								Comments	Lab I.D.
8-25-14	14:04	PDX-B8-SP8A-082514-1404	W	2	X	X	X									
8-25-14	12:35	PDX-B4-SP4-082514-1235	W	2	X	X	X									
8-25-14	11:50	PDX-B3-SP3-082514-1150	W	2	X	X	X									

Relinquished By:	Date	Time	Received By:	Relinquished By:	Date	Time
Company: PORT OF PORTLAND	8-25-14	1504	Company:	Company:	8/25/14	1545

Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt.
Samples held beyond 60 days subject to storage fee(s)

Received For Lab By: Cindy Hillyard
Date
Time

Section IV

MONITORING COMPLIANCE REPORT

MONITORING COMPLIANCE REPORT

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1. INTRODUCTION

The purpose of this *Monitoring Compliance Report* is to comply with Schedule B of Portland's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit. The report summarizes monitoring activities conducted by the City of Portland during fiscal year (FY) 2014-15 (permit year 20) and presents the results.

The Oregon Department of Environmental Quality (DEQ) issued Portland's current (third-term) NPDES MS4 permit on January 31, 2011. The monitoring requirements in the permit became effective July 1, 2011, when DEQ gave conditional approval to Portland's *MS4 Quality Assurance Monitoring Plan* (QAMP), which the City submitted to DEQ on June 1, 2011 and revised January 29, 2013. This *Monitoring Compliance Report* is the fourth report on monitoring activities that were conducted in accordance with the requirements of the 2011 permit. Monitoring procedures, locations, frequency, and other detailed information can be found in the QAMP.

Table B-1 in Schedule B of the 2011 permit summarizes required monitoring types, locations, frequency, and analytic parameters. The required monitoring information is included in Section 3 of this Monitoring Compliance Report, in the order listed in Table B-1 of the permit.

In FY 13-14, Portland completed the permit-required pesticide monitoring in accordance with the *Pesticide Monitoring Plan* that was submitted to DEQ on June 28, 2012. Portland also concluded the mercury monitoring in FY 13-14 and received approval from DEQ on January 30, 2014 to eliminate the mercury monitoring from Table B-1 of the permit.

The complete set of monitoring data is available on CD-ROM upon request.

2. OBJECTIVES

Schedule of B.1.a of the 2011 MS4 permit lists six objectives the monitoring program must incorporate:

i. Evaluate the source(s) of the 2004/2006 303(d) listed pollutants applicable to the co-permittees' permit area;
ii. Evaluate the effectiveness of Best Management Practices (BMPs) in order to help determine BMP implementation priorities;
iii. Characterize stormwater based on land use type, seasonality, geography or other catchment characteristics;
iv. Evaluate status and long-term trends in receiving waters associated with MS4 stormwater discharges;
v. Assess the chemical, biological, and physical effects of MS4 stormwater discharges on receiving waters; and,
vi. Assess progress towards meeting TMDL pollutant load reduction benchmarks.

Section 3 of this report describes how monitoring activities address these objectives and summarizes the monitoring results.

3. REQUIRED MONITORING TASKS

3.1. INSTREAM MONITORING

Purpose

Instream monitoring refers to the collection of water quality samples from streams that receive MS4 discharges. Instream monitoring addresses Schedule B.1 monitoring objectives ii, iv, v, and vi. Specifically, instream monitoring is critical for evaluating long-term trends in receiving waters with MS4 discharges, as well as for assessing the effects of MS4 discharges on receiving waters.

Background

The City has conducted a comprehensive ambient monitoring program at fixed locations since the early- to mid-1990s. The data collected have been used to help DEQ establish total maximum daily loads (TMDLs) in the Columbia Slough, Johnson Creek, Willamette River, Fanno Creek, and Tryon Creek. Sites are monitored during both dry-weather and wet-weather conditions. The City will continue that monitoring program at fixed locations at a reduced scale through the end of this permit term, while at the same time implementing a probabilistically based monitoring program. FY 10-11 was the first year instream data were collected using the probabilistic approach. The number of monitoring locations, monitoring frequency, and analytical parameters are shown in Table B-1 of the 2011 permit.

Results

Comprehensive Ambient Sampling – Summary

Surface Water Body	No. of Locations [1] Fixed/Probabilistic	Monitoring Frequency [1] Fixed/Probabilistic
Columbia Slough[2]	2 / 5	Bi-monthly/quarterly + 1 storm
Fanno Creek	1 / 2	Monthly to quarterly/quarterly + 1 storm
Johnson Creek[2]	2 / 6	Bi-monthly/quarterly + 1 storm
Tryon Creek	3 / 2	Most monthly/quarterly + 1 storm
Tualatin River Tributaries	0 / 2	---/quarterly + 1 storm
Willamette River[3]	3 / 0	monthly to quarterly/---
Willamette River Tributaries	0 / 3	---/quarterly + 1 storm

[1] The numbers of sampling locations and monitoring events are greater than shown in Table B-1 of the MS4 permit, but do not necessarily represent future sampling activities.
[2] Some sampling locations are outside the City of Portland urban services boundary (USB).
[3] Currently, there are no probabilistically selected monitoring locations in the Willamette River.

Attainment of Selected Water Quality Standards / Guidance Values

Surface Water Body	Attainment of Water Quality Standards or Guidance Values[1]			
	Bacteria[2]	**Dissolved Copper[3]**	**TSS**	**Total Phosphorus**
	406 MPN/100 mL	2 µg/L	25 or 20 mg/L[4]	0.13 or 0.155 mg/L[5]
Columbia Slough	37/38 (97%)	37/38 (97%)	28/38 (74%)	28/38 (74%)
Fanno Creek	12/22 (55%)	17/22 (77%)	17/22 (77%)	13/22 (59%)
Johnson Creek	30/43 (70%)	32/43 (74%)	36/43 (84%)	39/43 (91%)
Tryon Creek	32/45 (71%)	38/45 (84%)	42/45 (93%)	42/45 (93%)
Tualatin River Tributaries	6/10 (60%)	10/10 (100%)	8/10 (80%)	8/10 (80%)
Willamette River	33/36 (92%)	36/36 (100%)	33/36 (92%)	23/24 (96%)
Willamette River Tributaries	12/15 (80%)	8/15 (53%)	12/15 (87%)	13/15 (87%)

[1] Number of samples that attain standard/number of samples collected (percent attainment).
[2] 406 MPN/100mL is the single sample standard.
[3] Based on the best available science and best professional judgment on the potential impact of dissolved copper on salmonids, a lower guidance value of 2 µg/L was used starting in FY 11-12, down from a value of 5 µg/L used in previous years.
[4] Guidance values: Columbia Slough – 25 mg/L; all other streams – 20 mg/L.
[5] Guidance value for Fanno Creek, spring to fall, is the Fanno Creek TMDL concentration of 0.13 mg/L. Guidance value for all other streams, spring to fall, is the Columbia Slough TMDL concentration of 0.155 mg/L.

Most streams meet most of the standards or guidance values most of the time, except for bacteria and phosphorus in Fanno Creek, bacteria in the Tualatin River tributaries, and dissolved copper in the Willamette River tributaries.

Bacteria concentrations in the urbanized smaller tributaries met the single sample standard between 60 and 80 percent of the time. The mainstem Willamette River and the Columbia Slough met the single sample standard for 92 and 97 percent of the samples, respectively.

Attainment of the dissolved copper guidance value ranged from 53 percent in the Willamette River tributaries to 100 percent in the Willamette River and Tualatin River tributaries.

The Columbia Slough and Johnson Creek met their respective TSS guidance values (established to meet the toxics TMDL) in 74 and 84 percent of samples, respectively. All other streams met the TSS guidance values in 77 to 93 percent of samples.

The Columbia Slough, Fanno Creek, and Tualatin River tributaries met their respective phosphorus TMDL concentrations across all locations ranging between 59 and 80 percent of samples. This is consistent with previous years. Using the Columbia Slough TMDL as guidance, other streams showed attainment of 87 percent and greater for phosphorus.

3.2. Continuous Instream Monitoring

Purpose

Continuous instream monitoring refers to ongoing physical stream monitoring at fixed locations within streams that receive MS4 discharges. It typically consists of stream gauge and temperature measurements, as well as the calculation of stream flow, based on the cross section of the stream at the monitoring location. The U.S. Geological Survey (USGS) operates the monitoring sites, and the City provides partial funding via joint funding agreements (JFAs).

USGS provides data management and storage and some limited data interpretation. Continuous instream monitoring addresses Schedule B.1 monitoring objectives i, ii, iii, iv, v, and vi.

Background

The USGS operates stream gauges in many Portland streams. One site has been monitored since 1940, but more typically, monitoring started in the 1980s. At a minimum, all gauges provide gauge height and discharge. Most gauges also provide temperature monitoring, and the Willamette River gauge at the Morrison Bridge also provides a number of additional parameters.

Results

Summary of Selected USGS Continuous Monitoring Stations

	Discharge [cfs]			Temperature [°C]			Chlorophyll a [µg/L]
Statistic	**FC[1]**	**JC-1[2]**	**WR[4]**	**JC-1**	**JC-2[3]**	**WR**	**WR**
Maximum	44	1,400	134,000	24.3	25.0	24.91	21
Date of Maximum	3/15/15	3/15/15	12/23/14	6/26/15	6/29/15	6/29/15	7/31/14
Minimum	0.01	12	NA[5]	1.7	0.8	4.97	0.2
Date of Minimum	9/1/14	6/22/15	NA	1/1/15	11/18/15	1/3/2015	9/12/14

[1] FC = Fanno Creek at SW 56th Ave
[2] JC-1 = Johnson Creek at Milwaukie (SE Milport Rd.)
[3] JC-2 = Johnson Creek at Sycamore (SE 158th Ave.)
[4] WR = Willamette River at Morrison Bridge
[5] A minimum flow cannot be determined because the WR experiences a flow reversal because of tidal influence, resulting in a negative flow.

The maximum discharges in Fanno Creek and Johnson Creek were higher than last fiscal year, and both occurred on March 15 in 2015. The minimum discharges in the streams occurred in the summer months.

Temperature maximums occurred in late June in Johnson Creek and the Willamette River due to low river levels and very high ambient temperatures. Small streams typically respond more quickly to high ambient temperature and solar radiation, and therefore can exhibit temperature maximums earlier in the year than large streams.

Temperature maximums occurred in late June in Johnson Creek and the Willamette River due to low river levels and very high ambient temperatures. Small streams typically respond more quickly to high ambient temperature and solar radiation, and therefore can exhibit temperature maximums earlier in the year than large streams.

The summer temperature at JC-1 is mainly driven by conditions in the Crystal Springs Creek system, rather than the Johnson Creek mainstem. While the summer water temperature at JC-1 is often cooler than at JC-2 (as noted in the table above), there are three large unshaded inline ponds in Crystal Springs that can be a source of thermal loading during very hot days, which can result in higher temperatures at JC-1 than at JC-2. Since the removal in 2013 of one inline pond located at Westmoreland Park, it appears that a warming increase during very hot days in the summer is closer to 1°C compared to the 3°+ C increase prior to the removal of the pond.

The temperature maximum in both Johnson Creek and the Willamette River exceeded the respective biological criteria temperatures.

Chlorophyll a readings in the Willamette River were occasionally above the water quality criterion between July 1 and September 1 when flows are typically below 15,000 cfs. These exceedances are attributed to a combination of slow-moving water and hot weather.

3.3. STORMWATER MONITORING

Purpose

Stormwater monitoring refers to sampling stormwater discharges from specific locations in the stormwater system during defined storm events. Stormwater monitoring addresses Schedule B.1 monitoring objectives i, ii, iii, iv, v, and vi. Additionally, the City is interested in gaining a better understanding of the drivers of stormwater pollutant concentrations. This has proven difficult in the past because of the large size of the stormwater catchments sampled. Beginning with the implementation of the 2011 QAMP, the City has used the existing stormwater monitoring network associated with the Underground Injection Control (UIC) Water Pollution Control Facility (WPCF) permit for the MS4 monitoring locations. This approach targets smaller catchments and limits the number of variables considered when evaluating the factors that may influence stormwater quality.

The UIC monitoring network is organized into six panels (Panels 1 through 6) containing 15 sampling locations each. During each permit year, one panel (from Panels 1 through 5) is sampled during three storm events for a total of 45 samples annually. Every fifth year, an additional panel is also sampled (Panel 6) during three storm events, for a total of 30 UICs and 90 samples. After five years, the pattern is repeated.

During permit year 20, Panels 5 and 6 were sampled. MS4 analytes were analyzed only on Panel 5; however, some MS4 analytes, including TSS and dissolved copper, were also monitored as part of routine UIC monitoring on Panel 6.

Results

Stormwater Monitoring – Summary Panels 5 and 6, Selected TMDL Parameters

Statistic	E. coli[1] MPN/100 mL	Dissolved Copper µg/L	TSS mg/L	Total Phosphorus[1] mg/L
Number of Samples	45	91	91	45
Detection	93%	100%	97%	96%
< 1000 ADT Median	360	2.3	12	0.118
< 1000 ADT 90th Percentile	4,400	5.23	52.4	0.409
> 1000 ADT Median	465	2.58	17	0.105
> 1000 ADT 90th Percentile	6,500	6.09	89.6	0.537
Standard or Guidance Value [2]	406	2.00	20	0.155
Samples above standard or guidance value	49%	36%	66%	62%
Ratio Median: >1000 ADT / <1000 ADT	1.29	1.12	1.42	0.89

ADT = Average Daily Vehicle Trips
[1] MS4 analyte
[2] Standards or guidance values were created for surface water bodies and are presented only for comparison.
406 MPN/100mL is the single sample E. coli standard

A total of 91 samples at 30 locations (16 at locations with greater than 1,000 average vehicle daily trips [ADT] and 14 at locations with less than 1,000 ADT) were collected during three storm events. At one location, four storm samples were collected. Because the stormwater that was sampled discharges to City sumps, not surface water, reference to surface water standards or guidance values is solely for comparison purposes.

The median concentrations of dissolved copper in both traffic categories were slightly above the guidance value, and the 90th percentile concentrations in both traffic categories were above the guidance value.

The total phosphorus and TSS median concentrations were slightly below the guidance values for both traffic categories. The 90th percentile values were higher than the guidance values.

The median E. coli concentrations were slightly below the standard of 406 MPN/100 mL in the < 1000 ADT and slightly above the standard in the > 1000 category. The 90th percentile was 10 to 15 times the single sample standard.

The difference in the median of the analytes between the traffic categories is relatively small for dissolved copper, E. coli, and total phosphorus, but greater for TSS. Median concentrations for almost all analytes with a detection percentage above 50 percent are generally higher in the > 1,000 ADT traffic category.

The March 3, 2015 sample collected from P6_8 (10064 SE Woodstock Blvd) had the highest TSS concentration (458 mg/L) observed at a stormwater monitoring location this fiscal year. A recycling facility operates at this location, and field crews observed poor housekeeping practices during sampling. An additional sample was collected at this location on June 2, 2015, with a TSS result of 57 mg/L.

3.4. STORMWATER MONITORING – PESTICIDES

Purpose
Pesticides monitoring refers to the monitoring of pesticides in stormwater during defined storm events. It addresses Schedule B.1 monitoring objectives ii, iii, and v. More specifically, the monitoring is designed to help identify pesticide sources that contribute to DEQ water quality criteria exceedances (or, in the absence of water quality criteria, EPA aquatic health benchmarks).

Background
Although the City has monitored extensively for legacy pesticides in all media, including stormwater, surface water, sediment, and fish tissue, in multiple water bodies, it has not historically monitored as extensively for current-use pesticides. The City's UIC WPCF permit requires monitoring of a select number of pesticides (mainly herbicides) in stormwater, including the two pesticides (2,4-D and pentachlorophenol) the MS4 permit requires the City to monitor. These are the only two pesticides that have been detected in more than 10 percent of the samples taken in stormwater draining to UICs since 2005. All other current-use pesticides monitored through June 2014 have either never been detected or have had less than 10 percent detects.

The City submitted an MS4 pesticide monitoring plan to DEQ on June 28, 2012. That plan described the monitoring protocol and provided a list of pesticides to be monitored during three separate events. The three pesticide monitoring events were completed in October 2012, April 2013, and June 2014. However, additional pesticides were also analyzed at 30 monitoring locations (Panels 5 and 6) in FY 14-15 to comply with the UIC WPCF permit as part of the Priority Pollutant Screen (PPS) sampled three times during the 10-year permit cycle. The following table shows the results of that monitoring.

UIC PPS Pesticide Monitoring –Summary of Detected Pesticides

Statistic	DC	DI	ET	FP	IM	MCPP	PE	SM	TR
Number of Samples	30	30	30	30	30	30	30	30	30
Detection	3.3%	6.7%	16.7%	3.3%	3.3%	3.3%	3.3%	3.3%	13.3%
Max [µg/L]	1.1	0.73	0.11	0.14	0.065	0.14	0.37	0.42	0.42
EPA Aquatic Life Benchmark [µg/L] [1]	1850	80	8750	0.11	34.5	>46,500	69	500	125

DC = dichlobenyl; DI = diuron; ET = ethofumesate; FP = fipronil; IM = imidacloprid; PE = pendimethalin; SM = simazine; TR = triclopyr
[1] Lowest EPA aquatic life benchmark (invertebrate or fish)

Of the targeted insecticides listed in Table B.1 of the City's MS4 permit, only two (fipronil and imidacloprid) were detected at one location. Fipronil was detected at a concentration slightly exceeding EPA's aquatic life criterion for invertebrates. The Fipronil reporting limit (0.12 µg/L) was slightly above the EPA freshwater acute criteria (0.11 µg/L). Fipronil is a dinitroaniline herbicide used to control ants, cockroaches, fleas, ticks, and weevils and is readily available for home use. Imidacloprid is a systemic neonicotinoid insecticide that is the most widely used insecticide for pest control in gardens and also as a flea treatment for pets.

Of the targeted herbicides listed in Table B.1 of the City's MS4 permit, only two (pendimethalin and triclopyr) were detected at one location each, at concentrations far below the lowest EPA aquatic life benchmark. Pendimethalin is a fairly commonly used dintroaniline herbicide used to

control annual grasses and certain broadleaf weeds. Triclopyr is a systemic herbicide that is used for control of broadleaf weeds.

Of the additional 180 non-targeted pesticides, five herbicides (dichlorobenyl, diuron, ethofumesate, MCPP, and simazine) were detected with a frequency of up to 16.7 percent. Ethofumesate was detected at the highest frequency (16.7%) and is used for controlling weedgrass and annual meadow-grass in turf, primarily in commercial applications.

In addition to the UIC PPS pesticide monitoring, a number of pesticides are analyzed as part of routine UIC WPCF monitoring. These pesticide samples were collected during three events at all 30 locations of Panels 5 and 6 between October 2014 and June 2015.

UIC WPCF Pesticide Monitoring –Summary of Detected Pesticides

Statistic	2,4-D	2,4,5-T	2,4-DB	TP	DB	PCP	BZ
Number of Samples	91	91	91	91	91	91	91
Detection	12.1%	1.1%	2.2%	5.5%	1.1%	92%	1.1%
< 1000 ADT[1] Median [µg/L]	< 0.06	< 0.15	< 0.5	< 0.1	< 0.1	0.17	< 0.5
> 1000 ADT[1] Median [µg/L]	< 0.06	< 0.15	< 0.5	< 0.1	< 0.1	0.225	< 0.5
Maximum [µg/L]	1.4	0.31	48.8	0.19	0.17	4.3	0.54
EPA Aquatic Life BM [µg/L] [2]	12,500	NA	1,000	NA	NA	25	50000
Table 30 Criterion [µg/L] [3]	NA	NA	NA	NA	NA	8.7 [4]	NA

TP = 2,4,5-TP (silvex); DB = dinoseb; PCP = Pentachlorophenol; BZ = bentazon
[1] ADT = Average daily vehicle trips
[2] Lowest EPA aquatic life benchmark (invertebrate or fish)
[3] Acute freshwater criterion (OAR 340-041, Table 30, August 4, 2015)
[4] Acute freshwater criterion at pH = 7.0
NA = not available

Of the 12 pesticides analyzed, seven were detected, but the lowest EPA aquatic life benchmark was not exceeded for any pesticide:

- All analytes except for pentachlorophenol were detected infrequently and at levels well below EPA acute criteria.

- Pentachlorophenol (PCP) was detected in all but seven samples (92 percent) at a maximum concentration of 4.3 µg/L, which is well below the EPA aquatic life benchmark and the Oregon Administrative Rules (OAR) 340-041 acute freshwater criterion. As has been observed in previous years, the median pentachlorophenol concentration in locations with > 1,000 ADT was greater than that in locations with < 1,000 ADT.

3.5. MACROINVERTEBRATE MONITORING

Purpose
Macroinvertebrate monitoring refers to the annual monitoring of benthic macroinvertebrates in late summer from the same rotating sampling locations where instream monitoring occurs. Macroinvertebrate monitoring addresses Schedule B.1 monitoring objectives ii, iv, v, and vi. It is intended to track the status and trends of biological communities within water bodies that receive MS4 discharges. It is designed to evaluate whether and to what degree the biological conditions of streams are changing. Macroinvertebrate monitoring is timed to coincide with the first instream monitoring of the fiscal year so biological information is collected at the same time that summer water quality samples are collected.

Background
Macroinvertebrates are a useful tool to evaluate water quality because they represent local conditions (they have limited dispersal ability); and are sensitive to changes in physical habitat and water chemistry.

Results – Macroinvertebrate Monitoring

Macroinvertebrate Monitoring – Summary by Watershed

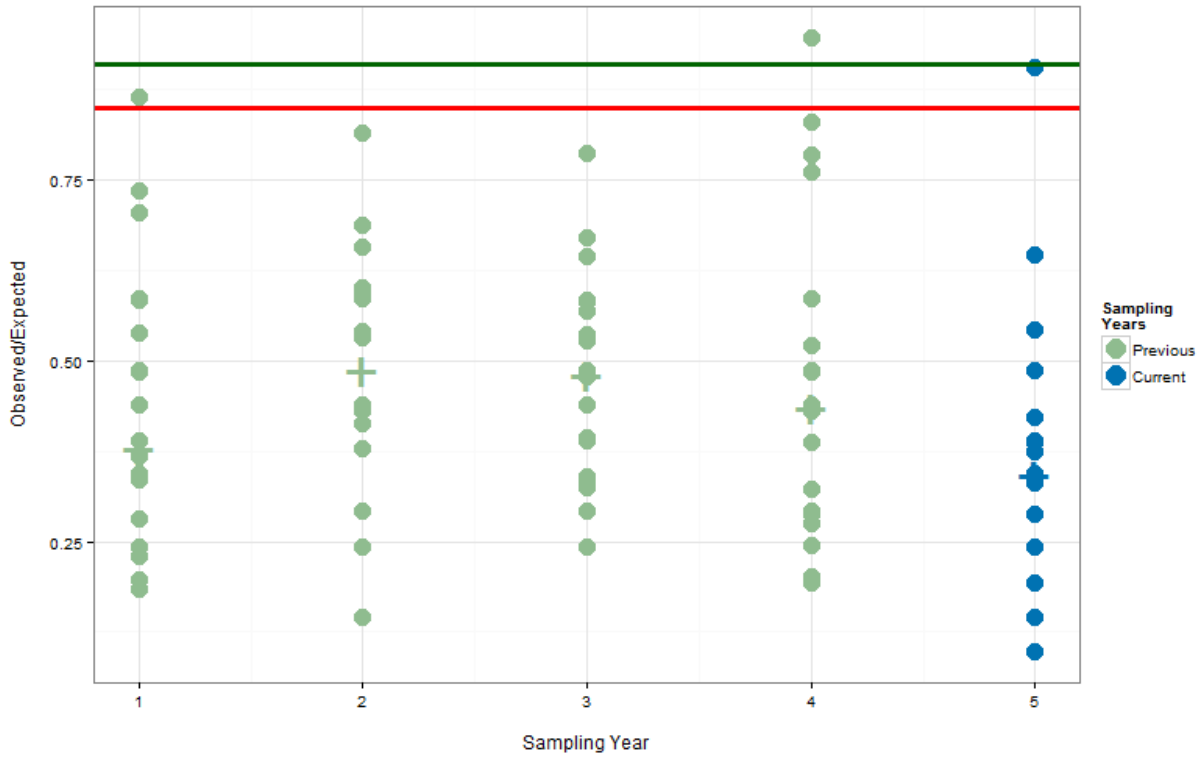
Watershed	FY 10-11 to FY 13-14	FY 14-15	
	Median O/E Ratio		Range of O/E Ratio
Columbia Slough	0.28	0.19	0.10 – 0.24
Fanno Creek	0.43	0.36	0.33 – 0.39
Johnson Creek	0.49	0.36	0.24 – 0.48
Tryon Creek	0.67	0.59	0.54 - 0.64
Tualatin Tributaries	0.43	0.36	0.34 – 0.37
Willamette River Tributaries	0.67	0.42	0.29 – 0.91

Macroinvertebrate samples were collected in summer and early fall of 2014. The sampling protocol is described in the 2011 City of Portland *Quality Assurance Monitoring Plan*. The PREDATOR score (observed macroinvertebrate communities over modeled expected macroinvertebrate communities, based on reference conditions), one of a number of options to summarize macroinvertebrate data, was calculated and compared to the benchmark scores of 0.85 (scores below this are "most impacted") and 0.91 (scores above this are "least impacted") established by DEQ. Scores between 0.85 and 0.91 are "minimally impacted".

- Medians for each year ranged from a low of 0.34 (most recent sampling year) to a high of 0.48 (sampling year 3). There was considerable variability within years and the differences among years were not statistically significant or suggestive of trends over time (Figure 2).
- The highest O/E value in the most recent year was 0.90 in Balch Creek, just below the 0.91 threshold for "least impacted" streams and indicating that conditions at this location are close to reference conditions in western Oregon (Figure 2). The only location in all five monitoring years (100 locations total) that met the "least impacted" benchmark was Miller Creek in Year 4 (0.95). The only other station above the "minimally impacted" benchmark (0.85) was the same Balch Creek station sampled in the first year. (Stations are sampled on a

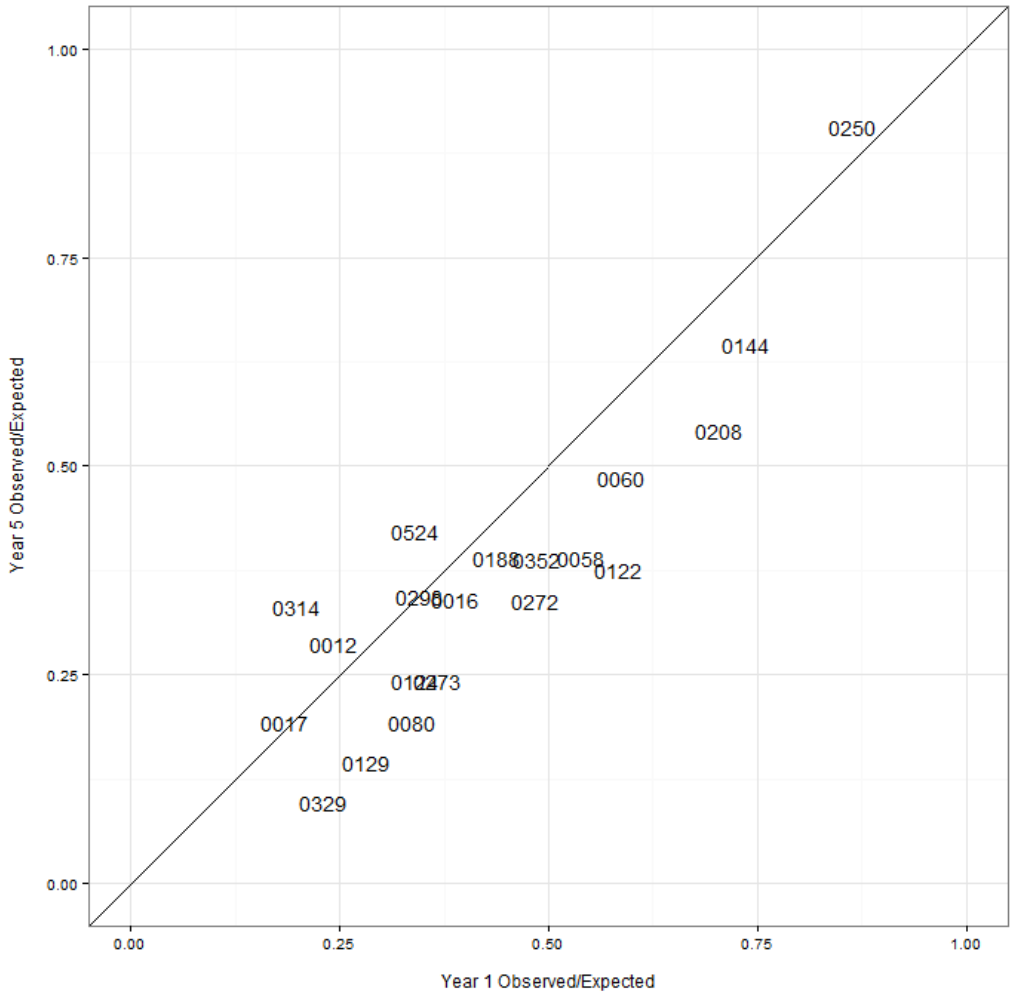
four-year rotational panel so the current Year 5 samples are revisits of the Panel 1 stations sampled in the first year.)

Figure 2: Observed/Expected scores across the five sampling years. The green line indicates the "least impacted" benchmark (0.91) and the red line indicates the "most impacted" benchmark. The crosses ("+") indicate the median for that sampling year.



- Five other locations had a score above 0.75: one each in Saltzman, Linnton, Miller and Balch creeks (all Forest Park tributaries to the Willamette River), and one in a tributary to Tryon Creek in Tryon Creek State Park.
- Year 5 is the first year in which stations in the four-year rotational panel were resampled. Although the overall differences among years were not significant, comparing the panel 1 stations sampled in Years 1 and 5 with a paired t-test indicates that the scores in Year 5 were significantly lower than the scores from the stations sampled in Year 1 (*Figure 3*). The sample size is limited, and there are a number of reasons that could explain the difference, including weather. A more rigorous test of changes over time will be a comparison of the first and second samples obtained from all four panels, which will be available in Year 8.

Figure 3: Comparison of Year 1 O/E scores to Year 5 scores from the resampled panel 1 stations. The number indicates the PAWMAP station number. The diagonal line indicates the scores between the two sampling periods are identical. Stations below the line had higher scores in Year 1 than Year 5; stations above the line had higher scores in Year 5.



- There were large differences among the watersheds. The Columbia Slough was significantly lower than all other watersheds, and the Willamette streams and Tryon Creek were significantly higher than all other watersheds. It is important to note, however, that most metrics used to evaluate the health of macroinvertebrate communities are developed for pool-riffle stream systems. They are not as effective in addressing sloughs, wetlands, and large rivers, since the historical and reference macroinvertebrate communities in these systems are different from the higher-gradient, faster-water pool-riffle systems to which most of the macroinvertebrate community metrics are geared. While the poor O/E scores in the Columbia Slough are likely in part because of poor habitat conditions, this cannot be separated from the fact that a pristine Columbia Slough would have lower O/E scores than the other watersheds because the O/E model is not developed for slough systems, and so the results for this watershed should be interpreted with caution.

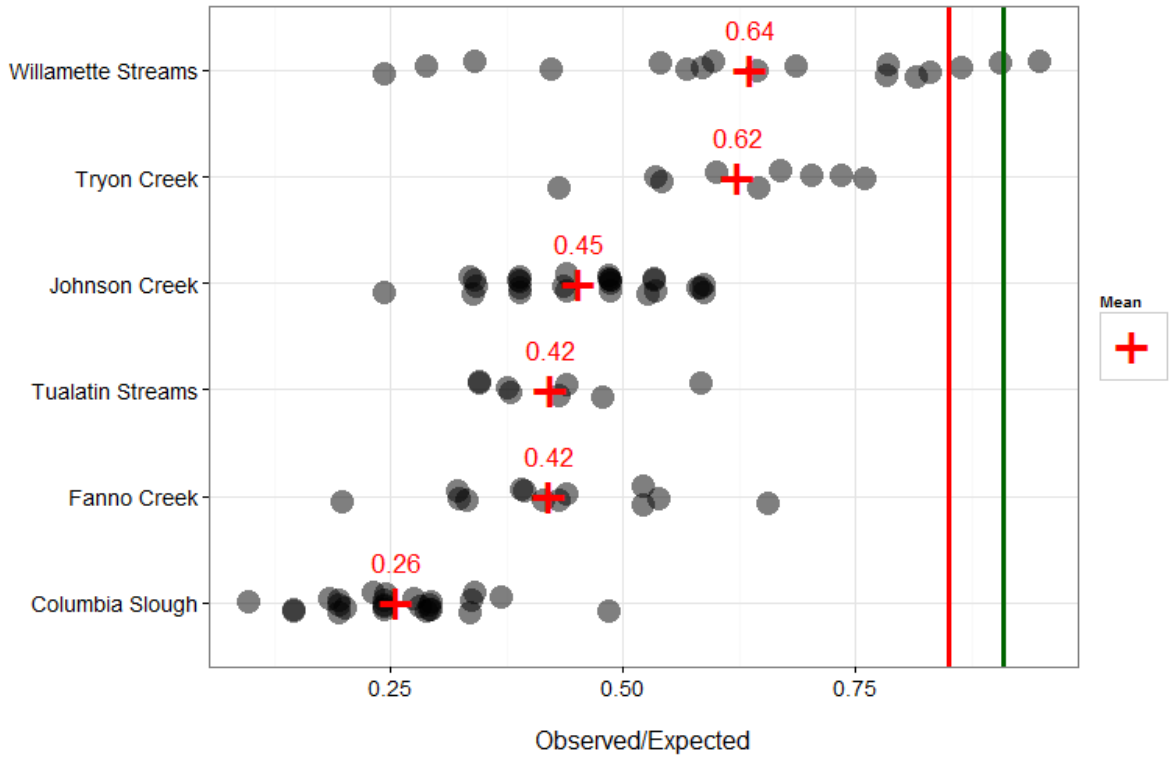



Figure 4: Observed/Expected scores for macroinvertebrate communities in Portland watersheds. The green line indicates the "least impacted" benchmark (0.91) and the red line indicates the "most impacted" benchmark. The red crosses ("+") indicate the mean for that watershed.