

working for clean rivers

ANNUAL REPORT 2006 - 2007

Portland
Watershed
Management
Plan



contents

PORTLAND WATERSHED MANAGEMENT PLAN
ANNUAL REPORT 2006 - 2007

Introduction	1
PWMP Milestones	3
Watershed Strategy Implementation	4
Watershed Map	5
Strategy 1 STORMWATER MANAGEMENT	6
Strategy 2 AQUATIC / TERRESTRIAL ENHANSEMENT	8
Strategy 3 REVEGETATION	10
Strategy 4 PROTECTION / POLICY	12
Strategy 5 OPERATIONS / MAINTENANCE	14
Strategy 6 EDUCATION, INVOLVEMENT. STEWARDSHIP	16
Watershed Investment Fund	18
Watersheds at a Glance	20
Tracking Progress	21
Challenges and Recommendations	22
Looking Forward	23



introduction

The goals of the Portland Watershed Management Plan are further integrated into regional planning for the health of the Willamette River. The River Renaissance State of the River Report provides a comprehensive assessment of citywide efforts to reclaim the Willamette River as a prosperous harbor with vibrant riverfront communities.

Portland Watershed Management Plan 2006-07

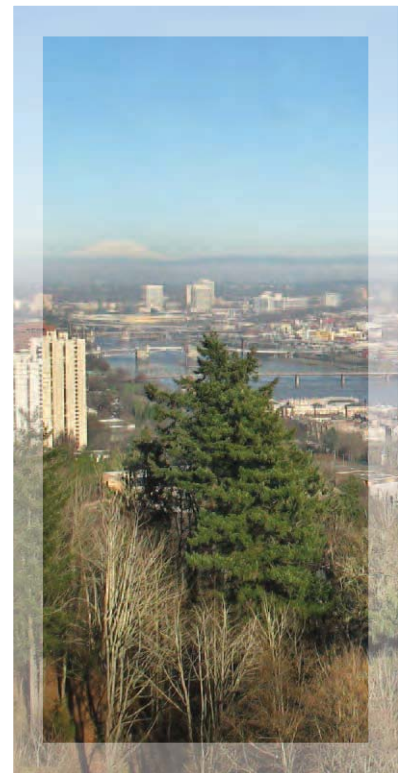


Watershed Plan Context

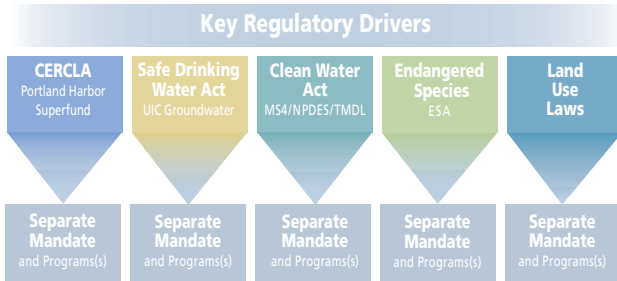
The city defines a healthy urban watershed as one where hydrology, water quality, and habitat are suitable to protect human health, maintain viable watershed and other ecological functions and processes, and support self-sustaining populations of native fish and wildlife species.

Improving watershed health is truly a citywide effort. As a municipal government, the City of Portland has the utility service and regulatory responsibility to manage stormwater, which is important in supporting watershed health.

In 2005, the city developed the Portland Watershed Management Plan (PWMP) to guide its efforts to improve water quality and watershed health, and protect and restore natural resources. The PWMP is based on the “watershed approach.” The watershed approach is an overall context that defines actions needed to improve watershed health. The watershed context also guides how the city does its ongoing work in developing and maintaining its infrastructure (storm and sanitary sewer systems, roads, water supply system, etc.), property redevelopment, and open space. Using the watershed approach means that the city conducts activities - such as infrastructure construction and maintenance, redevelopment of areas such as the South Waterfront, and construction of new parks - in a manner that protects and enhances watershed health. Rather than focusing separately on single issues or meeting specific regulatory requirements, such as water quality protection or contaminated sediment cleanup, the PWMP considers all activities that affect watershed conditions.

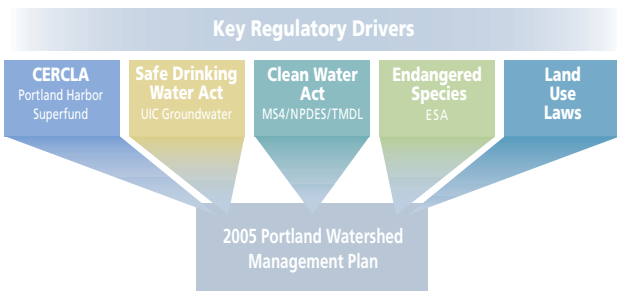


Traditional Approach



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

Integrated Approach to Meeting Regulatory Mandates



As Portland continues to grow and develop, city bureaus are working together to implement programs and projects that achieve watershed health objectives. The city also works with watershed councils, community groups, business organizations and other jurisdictions, both in Portland and upstream of Portland's watersheds. This collaborative approach enables entities to share resources and combine efforts, and address watershed issues that require a comprehensive approach.

This PWMP annual report includes watershed goals and objectives that are within the scope of the State of the River report. In fact, PWMP supports the Clean and Healthy River theme of River Renaissance. Although the reports serve different purposes and gauge progress differently, they are intended to be complementary.

The role of the Annual Report

The Watershed Plan Annual Report:

- Documents progress annually toward achieving watershed protection and improvement, as defined by the goals and objectives identified in the PWMP;
- Summarizes important milestones achieved in that year; and
- Highlights future implementation priorities to illustrate how the city will continue to work toward watershed health objectives.

In addition to the annual report, the city completes reporting requirements related to several ongoing activities, including:

- Individual stormwater management reports required by permits issued to the city by the Oregon Department of Environmental Quality and Environmental Protection Agency; and
- Data and conditions reports completed on an ongoing basis for each watershed.

As the city implements strategies and actions for improving watershed health, future annual reports will describe progress toward meeting the plan's watershed health protection and improvement goals and objectives. Our ability to measure watershed health improvement will become more precise over time.

milestones

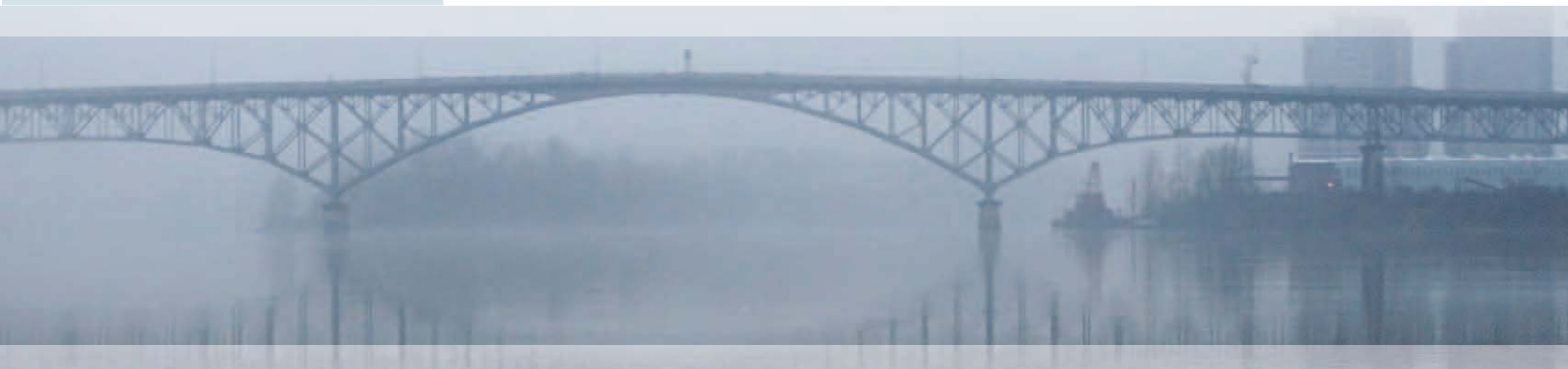
During the 06-07 fiscal year, the city completed several important milestones in moving forward with the watershed approach and implementing the PWMP.

One of the key milestones met was establishing a plan to implement the work described by the PWMP. Environmental Services and inter-bureau work groups developed the PWMP Implementation Plan, which is designed to direct the city's work in a manner to achieve watershed goals and objectives. The plan outlines the means by which the strategies and actions described in the PWMP will be coordinated and accomplished.

The Implementation Plan describes:

- How all city bureaus will work together to identify, select and fund watershed projects and activities;
- How the success of these projects and activities will be monitored and assessed;
- How the city will define the desired future of the watershed within the reality of our urban setting;
- How the city will keep the public informed of and involved in these activities;
- How city bureaus will work together and with other stakeholders; and
- How the city will evaluate and improve the system over time.

The Implementation Plan creates a technical, consistent approach to how this work is completed, and identifies how progress toward achieving watershed health will be measured and evaluated for improvement. The system establishes and institutionalizes integration of the various work components. For example, rather than multiple monitoring efforts to meet multiple federal mandates, the system moves us toward an integrated monitoring effort that reflects the watershed approach. That means we have identified what is needed to progress toward watershed health goals and improved watershed functions. Additionally, we've shown how that work also complies with our Clean Water Act, Safe Drinking Water Act, Superfund, and Endangered Species Act requirements. It's a major step toward institutionalizing and integrating the watershed approach into the city's work, and ensuring that the work reflects the watershed goals, rather than a particular regulatory mandate or organizational structure.



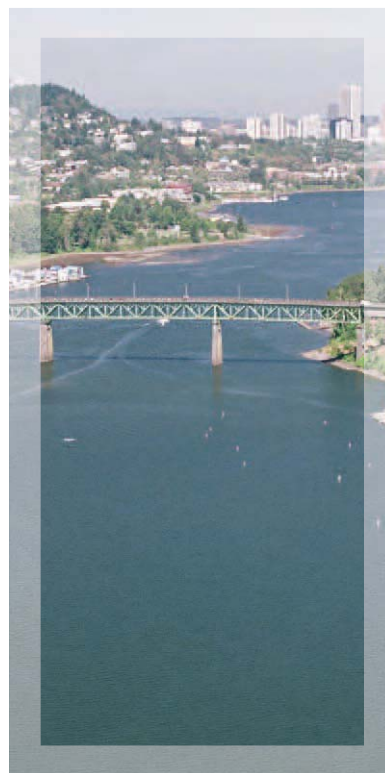
Overview

The watershed approach is based on four watershed health goals that relate to improving hydrology (what amount of water, at what time of year, at what volumes), physical habitat, water quality, and biological communities. Based on these goals, the city developed specific watershed health objectives for each of the five Portland metropolitan area watersheds. The watershed goals and objectives help identify the work needed to improve watershed health, and describe how the watershed approach will be applied to the city's ongoing work.

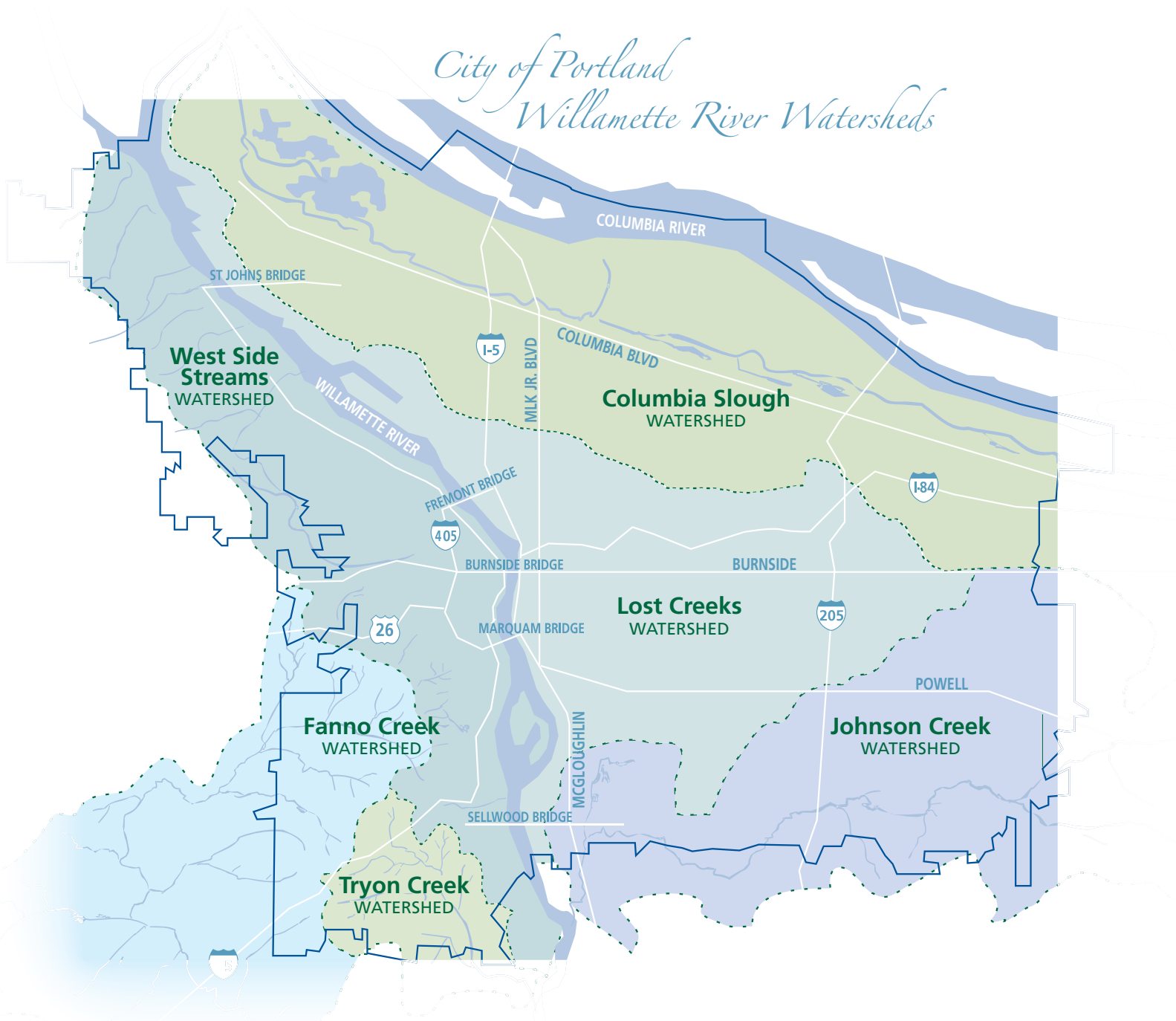
The city implements projects and actions according to their assigned priority, which is based on how much they are expected to improve watershed health and other factors. The PWMP identifies 6 strategies to meet the watershed goals and objectives. The PWMP relies on the Management System to prioritize these strategies and actions to achieve the greatest net benefit for watershed health. The strategies frame the city's actions and provide a context for evaluating outcomes.

Our success with the watershed approach depends on how we implement these strategies. As individual efforts, the actions described in the PWMP yield results, but we are still faced with watershed issues that stem from growth and redevelopment. The PWMP calls on city government to use collaboration, innovative techniques, and adaptive management to improve how these strategies are implemented. As the city continues to integrate efforts, our ability to evaluate actions will improve, and the strategies will provide a greater benefit to watershed health.

The following sections are intended to show how these strategies were put into action during the 2007 fiscal year. Each section highlights only a few of many examples of actions that illustrate the PWMP and the watershed approach.



*City of Portland
Willamette River Watersheds*



*“Improving watershed health
is truly a citywide effort”*

Performance Measures

Converted 410 linear feet of ditches to vegetated swales

Installed 698 private stormwater facilities

Installed 317 public stormwater facilities to manage over 80 acres of impervious area

Over 83 million square feet of impervious area managed for stormwater through the Clean River Rewards program

Administered 237 stormwater permits

Corrected 9 illicit discharges

Strategy 1: Stormwater Management

The City of Portland receives 37 inches average annual rainfall that must be managed in an effective, integrated manner to protect surface and groundwater resources and public and watershed health. Key stormwater management tools include sustainable stormwater facilities (green streets, ecoroofs, rain gardens), stormwater permits and monitoring, best management practices, and conservation. The following examples are significant achievements in stormwater management in the last fiscal year.

Cross Bureau Green Streets Team

Integrated planning, design and budgeting across all city bureaus are necessary to fully develop the potential for Green Streets, and the City of Portland took steps to make this happen. A two-phase effort was initiated in fall 2005 to create a citywide Green Streets Program ensuring the integration of Green Streets in city plans and projects. During Phase 1, a variety of opportunities and solutions were identified to address multi-bureau and site-specific challenges to Green Streets implementation. A second phase was initiated in July 2006 to synthesize the Phase 1 work into a citywide programmatic approach. The focus of development during Phase 2 included implementing a multi-bureau project to demonstrate integrated planning with Green Street treatments. The onset of this effort in 2007 is a major advance in the city's stormwater management strategy.

The SE Clay Green Street Project will install a series of green street facilities along SE Clay Street, from SE 12th Avenue to Water Avenue, and ties into the Eastbank Esplanade trail. This stormwater project is noteworthy because of its scale, and because it has multiple benefits, including improving pedestrian, bicycle, and motorist safety and building connections to trails and bike boulevards. It creates the route to the river identified in local neighborhood plans, the Central Eastside Urban Renewal Plan, and other planning documents and complements other redevelopment projects in the area. Project partners are Portland bureaus of Water, Planning, Development Services, Environmental Services, Office of Transportation, Portland Parks and Recreation, and the Portland Development Commission.

The Green Streets Cross-Bureau Team reports and more information about Green Streets are available at www.portlandonline.com/bes/index.cfm?c=44407&.



Clean River Rewards

Clean River Rewards, the city's stormwater discount program, launched in October 2006 to encourage ratepayers to manage stormwater on their property by providing a discount on the on-site stormwater portion of the city's water/sewer bill. On-site stormwater management reduces the volume of runoff that reaches the combined sewer system when it rains. The Clean River Rewards Program offers technical assistance for residential and commercial ratepayers. As of June 2007, about 29,000 ratepayers had received discounts for managing stormwater on their property. For more information visit www.CleanRiverRewards.com.

UIC/MS4 Permit Accomplishments

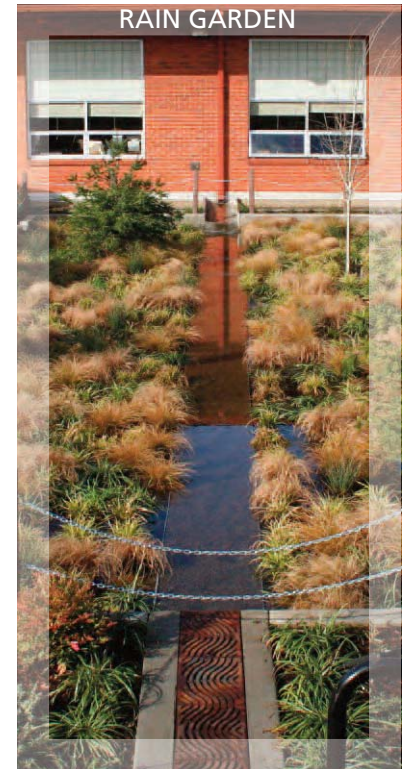
The city holds two Oregon Department of Environmental Quality (DEQ) permits for stormwater management: the Water Pollution Control Facilities Permit for Class V Underground Injection Control Systems (UIC Permit) and the Phase I National Pollutant Discharge Elimination System (NPDES) Separate Storm Sewer System (MS4 or stormwater) Discharge Permit. The UIC permit covers 9,000 individual underground sumps that manage stormwater through infiltration to groundwater. It was issued in 2005 and is one of only a few in the nation. The MS4 permit is the municipal stormwater permit, which covers discharge to the public storm sewer system. It was originally issued in 1995, and was renewed in 2004. These permits require that pollutants in stormwater are reduced before being discharged to surface water, or remain at sufficiently low levels before being discharged to groundwater, to protect water quality. Several important milestones were achieved in the UIC and MS4 programs during this reporting period:

- Internal procedures, policy and guidance were developed for implementation of the new UIC program;
- The 11th annual MS4 compliance report was submitted to DEQ;
- The second round of UIC sampling was completed and the second annual stormwater discharge monitoring report was submitted to DEQ; and
- UICs that do not comply with permit requirements were identified and the city has proceeded with evaluating corrective action.

Information about permits is at www.portlandonline.com/bes/index.cfm?c=31892.

Mt. Tabor Middle School Rain Garden

In 2007, the Mount Tabor Middle School Rain Garden received an American Society of Landscape Architects award for its simple, elegant design, and ecological and educational benefits. This collaborative project of the City of Portland and Portland Public Schools manages stormwater from the school roofs, parking areas, and playground areas through the use of rain gardens, parking lot swales, and planters. In all, over an acre of impervious surface runoff is managed by these facilities. The project is a great example of how a variety of impervious surfaces can be converted to capture, slow, cleanse, and infiltrate stormwater.



Performance Measures

Over 70 acres of habitat enhanced

Over 56,000 linear feet of stream restored

Strategy 2: Aquatic and Terrestrial Enhancement

Development and expansion are necessary for thriving urban areas, but they affect our natural resources in both dramatic and incremental ways. The watershed approach considers the impacts of urbanization on natural resources and minimizes them to the extent possible. The approach places special emphasis on repairing and restoring degraded fish and wildlife habitats. Partnerships with other agencies, tribes, associations, non-profits, educational institutions, and local residents and businesses are critical to a successful effort. The following are significant accomplishments in that effort over the 2006-2007 reporting year.

South Portland Riverbank Project

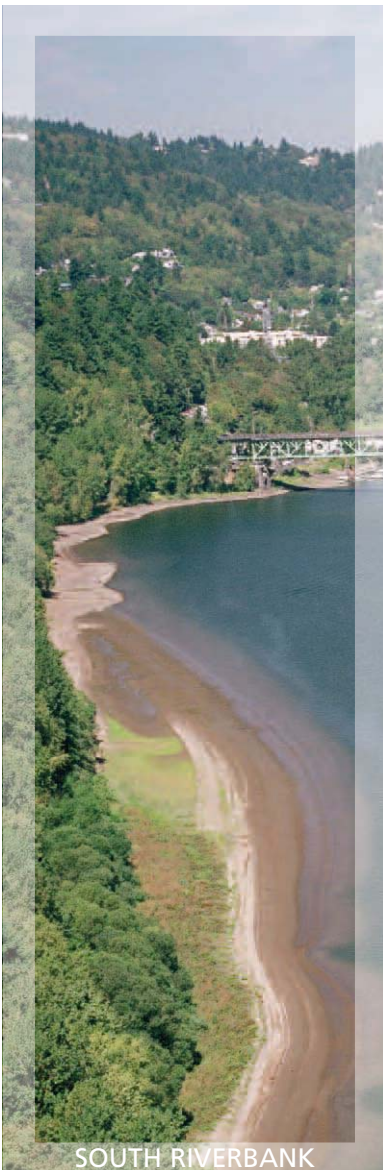
The South Portland Riverbank Project is a series of seven aquatic and terrestrial habitat enhancement projects around Stephens Creek, an important off-channel habitat area for ESA-listed Chinook and coho salmon and steelhead trout. Portland Parks, the property owner and project lead, has coordinated city bureaus, organizations, and volunteer groups to ensure a successful project.

Habitat enhancement projects range from invasive plant control and native revegetation, to reconnecting historic side channels and floodplains with the Willamette River. The fish and wildlife of our area are adapted to and depend upon diverse, healthy, native plant communities to supply food, cover, and nesting opportunities. Invasive plant removal and replacement with native grasses, shrubs and trees is a key component of the project.

Natural Resources Inventory Update

During 2006, the Bureau of Planning continued a collaborative effort to update Portland's inventory of riparian corridors and wildlife habitat. The Natural Resources Inventory Update (NRIU) project, is based on the science and approach Metro used to develop an inventory of regionally significant riparian corridors and wildlife habitat. The city has refined the regional inventory, including the landscape feature data and model criteria, to reflect additional scientific information and local conditions. The Bureau of Planning consulted with Environmental Services, Portland Parks and Recreation, Metro, and 14 independent technical reviewers in developing the refinements to Metro's inventory.

Updated inventory maps show the location of natural resource features and rank riparian corridors and wildlife habitat areas in terms of relative quality or functional value. The new inventory information will help with setting acquisition and restoration priorities, updating city regulatory programs, developing strategies to comply with regional, state and federal regulations and monitoring watershed conditions.



Terrestrial Ecology Enhancement Strategy (TEES)

The PWMP identified the need to develop a terrestrial ecology enhancement strategy to provide a common platform of information for management decisions and meeting citywide watershed health goals and objectives. This work was undertaken by an interbureau city team in collaboration with a technical advisory group with representatives from regional, state and federal agencies, environmental non-profits, watershed councils, and local business interests. Tasks undertaken by this group included:

- Developing lists of key wildlife/plant species and terrestrial habitats for protection, conservation and/or restoration;
- Identifying wildlife/plant species of concern, and identifying and prioritizing key management/control issues;
- Refining physical habitat and biological community objectives in the PWMP;
- Developing a document and policy database;
- Providing guidance to city bureaus to help review and add terrestrial ecology values to projects and actions; and
- Identifying new potential strategies and actions to address key management issues and help achieve watershed health goals and objectives.

This effort will be completed in FY 2008.

Fish and Habitat Monitoring

Monitoring of fish habitats in the last year found juvenile coho salmon after a culvert removal on Kelley Creek in the Johnson Creek Watershed. Coho, Chinook and steelhead trout were all found to be using the new habitat at the Ramsey Refugia in the Columbia Slough watershed. Upper Willamette River, lower Columbia River, and interior Columbia River Chinook fry were all utilizing this area. Their presence in these locations indicates the regional significance of these habitats to the migration patterns and habitat needs of these protected species. Over time, this information can help determine whether we are making progress with the habitat enhancement on the citywide scale.

Additional achievements have been made in establishing an aquatic insects monitoring study in the Fanno Creek and Tryon Creek watersheds. The BES Science Fish and Wildlife Program designed and implemented the study during the 2007 fiscal year, and in fall 2008 will release a report evaluating the data collected and the methods used. BES coordinated with students from Portland State University to collect and analyze the data, and plans to continue this relationship in future years as part of the PSU Capstone program.



Performance Measures

Planted over 50,000 trees

Planted over 2,100 street trees in public right-of-way or in city parks

Strategy 3: Revegetation

Trees and other vegetation provide a wide range of significant environmental and cultural benefits to our city, including cleaner water and air, stormwater and flood management, slope stability and erosion control, wildlife habitat, food and medicinal plants. Invasive species interrupt the balance of native vegetation populations, which poses threats to wildlife, human and economic health. Within the watershed approach, city government must integrate efforts to maintain existing vegetation with the removal of invasive non-native plants, increase green spaces by planting plants and street trees, and to integrate vegetation into the built environment to the extent possible. The following are significant accomplishments over the 2006-2007 reporting year.

Invasive Plant Species Resolution and Cross Bureau Management Program

Invasive species management in Portland is too large a job for individual city bureaus. In 2005, City Council adopted Invasive Species Resolution #36360 to manage invasive vegetation through coordinated bureau programs, projects and funding, monitoring, outreach, and education on a watershed scale. The resolution states that the city will:

- Commit to a ten-year goal to reduce noxious weeds on its lands;
- Develop a city-wide invasive weed management work plan;
- Support invasive weed management efforts within city bureaus and cooperative weed management efforts in the region; and
- Partner with state and federal agencies to investigate sustainable funding sources to aid invasive weed management projects.

In response to the resolution, Environmental Services developed project objectives and evaluated staff resources. The city formed an inter-bureau committee, which includes the bureaus of BDS, Planning, Water, BES, General Services, PDOT and Parks to coordinate the program, and to develop a three-year work plan for managing invasive species. The work plan will include a summary of current city and regional programs and tools; an invasive species inventory on city owned land; and invasive species management recommendations for the standard operations of each bureau.

The resolution also commits the city to collaborate with other regional agencies and non-profit partners. Metro, the Oregon Department of State Lands, the Cooperative Weed Management Agency, local soil and water conservation districts, the Nature Conservancy and others provide technical and volunteer resources for monitoring and implementation, and potential partners for

grant funding opportunities. An education and outreach component includes providing invasive species identification and management training to city staff, watershed councils, local plant nurseries (Oregon Nursery Association), and others; and developing a website that integrates this work with plant identification and management fact sheets and links to other agencies' information.

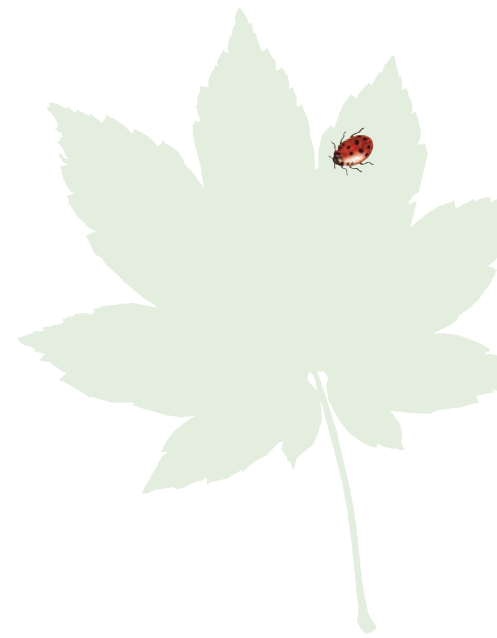
Wildfire Risk Reduction

The Federal Emergency Management Agency and the Oregon Office of Emergency Management are providing three years of funding to the city to develop site-specific action plans and begin implementing fuel reduction projects in Forest Park, Powell Butte, Oaks Bottom, and Willamette Bluffs. The projects will minimize the potential for catastrophic wildfires and improve ecological health by removing invasive, flammable plants that act as fuel ladders. Action planning occurred in 2006-2007, and implementation will begin in 2007-2008. As part of this program, Parks, BES, Portland Fire and Rescue, BDS, and other partners have developed public information materials to educate property owners on how to prevent or reduce wildfire damage. More information on wildfire risk reduction is available at www.portlandonline.com/wildfire.

Garlic Mustard Control

Garlic mustard is an invasive herb that can cross-pollinate or self-pollinate, and has a high seed production rate, allowing just one plant to produce many plants in a short time. This non-native plant can grow in dense shade or sunny sites, and produces chemicals that inhibit the growth of other plants. In Portland, garlic mustard is still only found in patchy distribution, but the potential exists for this species to create monocultures in large areas that will be difficult and expensive to control.

To prevent this, BES, PDOT's Bureau of Maintenance and the Three Rivers Land Conservancy are utilizing an early detection and rapid response (EDRR) method to manage garlic mustard. This collaborative group completed a pilot project in 2007 on ten acres within the rights of way of west Portland roadsides adjacent to natural area parks. The effectiveness of this pilot project was evaluated and the information gained will be used to help write an Oregon Department of Agriculture grant for west Portland garlic mustard control for 2007-2008.



“managing invasive vegetation through coordinated programs and partnerships”

Performance Measures

Addressed 3,500 complaint calls to the BES Spill Response Hotline

Conducted 8,382 erosion control-related inspections of private construction sites

Responded to 380 erosion control complaints through the city's building permit tracking program

Strategy 4: Protection and Policy

Protecting existing natural resource assets, and preventing further damage to them, requires an integrated and collaborative approach. The PWMP calls for the implementation of watershed management tools to limit erosion, sediment, pollutants, and stormwater that impact the existing stormwater infrastructure. Protecting watershed functions preserves and enhances fish and wildlife habitat as the city grows. The following are significant protection and policy accomplishments over the 2006-2007 reporting year.

Integrating Stormwater into Infill Design

Since the mid-1990s, there has been a large increase in Portland in low- and medium-density multi-family and rowhouse development. As its population grows, the city must find a way to manage new development, stormwater runoff, increasing traffic, green spaces, livable neighborhoods, and pedestrian and bicycle-friendly streets.

The Planning Bureau's Infill Design Project brought together community stakeholders to address varying design issues and determine an approach to meeting these multiple goals. This project focused on infill development in multi-dwelling zones, which increases impervious surfaces and creates significant challenges to managing stormwater on site. The Infill Design Project Advisory Committee included staff and input from Planning, Development Services, Environmental Services, Transportation, the Office of Sustainable Development, and Portland Fire and Rescue. Staff from these bureaus worked together to identify strategies for balancing stormwater management with urban design, transportation and fire access considerations. The Infill Design Project resulted in a range of code amendments and other implementation tools targeted toward stormwater management, including allowances for narrower driveways, limitations on paved areas, and provisions encouraging the use of permeable pavers.

The collaborative approach had success in the 2007 fiscal year. The Infill Housing Prototypes collection was completed, serving as a problem-solving tool highlighting "approvable" housing configurations that meet multiple objectives, including limiting impervious surfaces. More information about the Infill Design Project is available at www.portlandonline.com/planning/index.cfm?c=34024

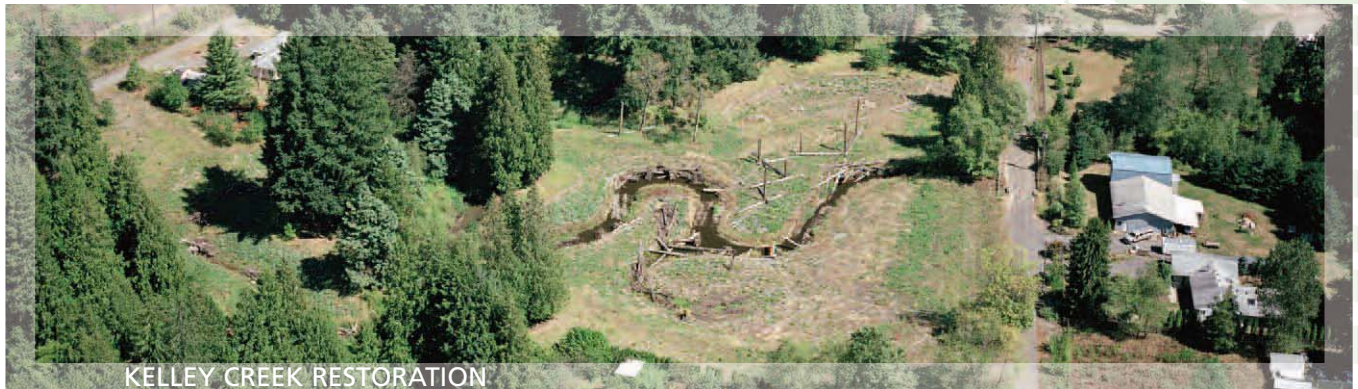


METRO Bond Measure

In November 2006, Portland voters approved a \$227 million Metro bond measure to protect water quality and habitat in the Portland metropolitan area. The measure funds Metro's Natural Areas Program to preserve significant natural areas near rivers and streams. The City of Portland Natural Resources Team (NRT), consisting of staff from Parks and Recreation, Environmental Services, the Bureau of Planning, and the River Renaissance Program, helped develop the bond measure. The NRT combined efforts across city bureaus to maximize the efficiency and effectiveness of natural resource planning in Portland. The result of this collaboration was a list priorities from each bureau that, when combined, served as a guide for natural resource decision-making within the scope of the PWMP goals. Several projects within the City of Portland were identified for funding to support the acquisition of natural areas for stream and wildlife protection, regional trail connectivity, and future parks.

Willing seller program in Johnson Creek

Since 1997, BES has coordinated the Johnson Creek Willing Seller Land Acquisition Program to help residents relocate from floodplain properties and flood damage. The city purchases properties from willing sellers at fair market value, and conserves the property as open space in perpetuity. To date, 112 homeowners have participated and 247 acres of floodplain have been acquired. For more information on the Willing Seller Program in the Johnson Creek Watershed, please visit www.portlandonline.com/bes/index.cfm?c=33213&a=106234.



*“make it easy to do
the right thing”*

Performance Measures

Inspected all 180 public stormwater management facilities; and cleaned and repaired 41 facilities

Inspected 336 private stormwater management facilities

Sealed 8 CSO outfalls from the city sewer system

Cleaned 9,017 catch basins, 1,015 sedimentation and sump manholes, 55,472 linear feet of ditch and 3,417 linear feet of culvert

Swept debris from 2,051 miles of Portland streets

Constructed or repaired 255 inlets, 4,070 linear feet of inlet lead, and 1,674 linear feet of culvert

Strategy 5: Operations and Maintenance

The city's management of public land requires the operation and maintenance of stormwater and wastewater facilities, public rights-of-way, and other infrastructure to protect public and watershed health. The PWMP implements this strategy by managing public facilities and infrastructures in order to maximize efficiency, minimize waste, and prevent the pollution of our watersheds. The following are significant operations and maintenance policy accomplishments over the 2006-2007 reporting year.

CSO Program

The city's combined sewer overflow (CSO) abatement program reached several milestones during the 2007 fiscal year. A 20-year City of Portland program to control CSOs to the Columbia Slough and Willamette River is more than two-thirds complete. Portland's combined sewers carry both sewage from homes and businesses and stormwater runoff from streets. When it rains, the combined system fills to capacity and some of the stormwater and sewage mixture overflows to the Willamette River.

The city completed Columbia Slough CSO projects in 2000 to reduce CSOs to the Slough by more than 99%. In 2006, the city completed the West Side Big Pipe Project, which controls CSOs from the west side of the Willamette River. Construction is underway on the East Side Big Pipe, which will control east side CSOs. When CSO construction is complete in 2011, combined sewers will overflow to the Willamette only three or four times per year instead of nearly every time it rains.

More information about the CSO abatement program is available at www.portlandonline.com/cso.

OPERA SHAFT CONSTRUCTION SITE



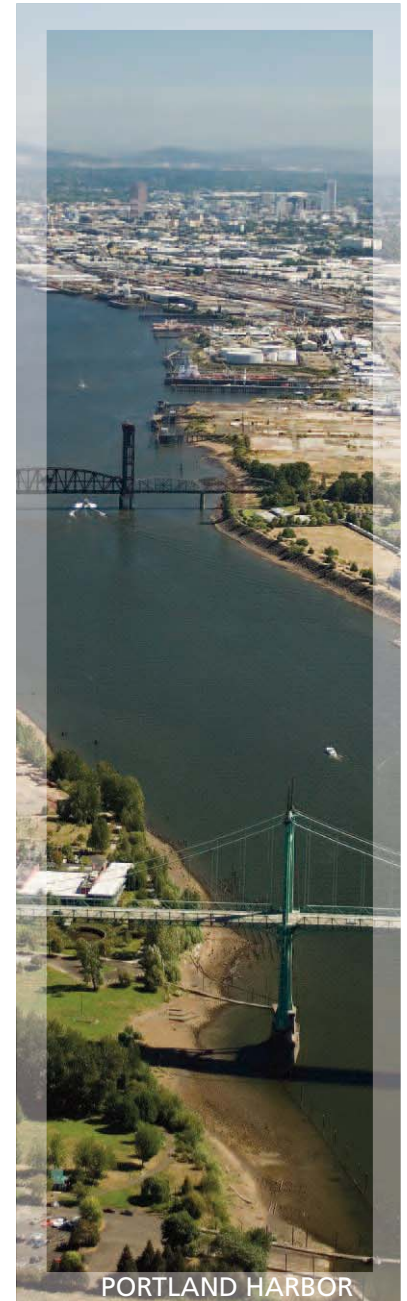
Portland Harbor

In December 2000, the EPA designated a portion of the Lower Willamette as the Portland Harbor Superfund Site due to contaminated sediments. The Lower Willamette Group (LWG), a coalition of Portland Harbor businesses, the city and the Port of Portland, is investigating sediment, water, and fish tissue samples for contamination. In February 2007, the City of Portland submitted a comprehensive report to the EPA that summarized information collected to date, identified potential sources of contamination, provided a preliminary assessment of risks the contaminants pose to humans and the environment, and identified additional data needed to complete the investigation and identify remediation options. The city is also working closely with the Oregon DEQ to identify and control current sources of contamination to the municipal stormwater collection system that potentially could be conveyed to the Willamette.

Burlingame Sewer Repair Project

The city Bureau of Environmental Services, and the Portland Office of Transportation combined efforts to address a failing sanitary sewer along Stephens Creek in Southwest Portland. Stormwater runoff flows had eroded the streambank and exposed portions of the sewer line. The confluence of Stephens Creek with the Willamette River provides critical habitat for fish species listed under the Endangered Species Act. Sewer line repairs were completed in summer 2006. The second phase of the project, scheduled for summer 2008, will enhance the streambank and provide additional pipe protection.

*“maximize efficiency,
minimize waste
and prevent pollution...”*



Performance Measures

12 Community Watershed Stewardship grants

30,352 students reached in classroom and field activities

19,812 participants in workshops, stewardship projects, tours, and out-reach events

6,584 visitors to the Community Watershed Stewardship website

13,000 visitors to the Sustainable Stormwater Management Program website

Strategy 6: Education, Involvement, and Stewardship

Portland residents and the City of Portland place a great emphasis on the value of watershed health. Many city programs rely on volunteers, non-profit organizations, public schools, and watershed councils. Education, involvement, and stewardship increase public awareness and encourage citizens to actively work to protect natural resources and watershed health. The following are significant education, involvement and stewardship accomplishments over the 2006-2007 reporting year.

Powell Butte Drainage Study

The Powell Butte Reservoir #2 Surface Drainage Project was conducted by the Portland Water Bureau to assess stormwater facilities and future needs at Powell Butte in outer south-east Portland. The study involved collaboration between the Water Bureau, Bureau of Environmental Services, Portland Parks and Recreation, Bureau of Development Services, the Friends of Powell Butte, and public park users. The study provides a plan for maintaining and upgrading the Powell Butte Reservoir system and future drainage projects. Public involvement and inter-bureau collaboration was key in planning the future management of stormwater while protecting the recreational and aesthetic values of the park.

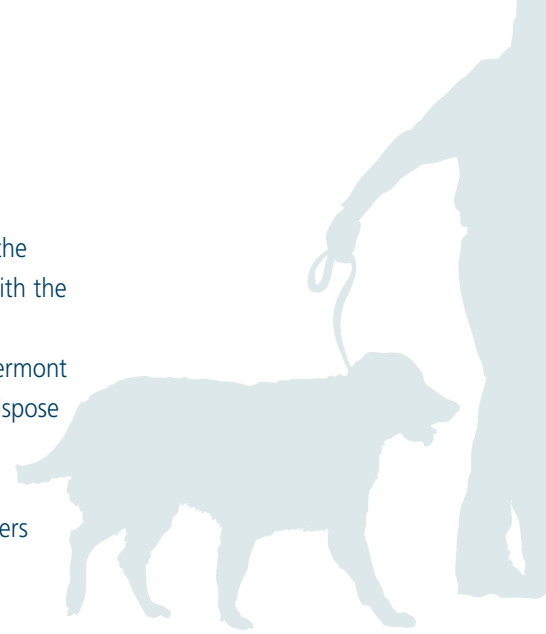
Clean Rivers Education Program

The BES Clean Rivers Education Program provides hands-on classroom, field, and community programs that teach students about the causes and effects of water pollution and how to protect rivers and streams. In 2007, 12,844 K-12 students in Portland area schools participated in classroom presentations and outdoor activities. In addition, 12,055 students participated in the Living Streams: Stories for Healthy Watersheds assembly program, an increase of over 60% during its second year. More information about the Clean Rivers Education Program is available at www.portlandonline.com/bes/index.cfm?c=41186.



Dogs for the Environment

In fall 2006, Portland Parks and Recreation initiated an outreach campaign to address the impacts of dog waste on water quality and fish and wildlife habitat. In collaboration with the Bureau of Environmental Services, Metro's Nature in Neighborhoods Grant Program, Audubon Society of Portland, the Southwest Watershed Resource Center, Friends of Vermont Creek, and Honey Bucket, the outreach program challenged dog owners to properly dispose of dog waste and keep dogs on trails in natural areas. The "Doggie Loo" pilot project collected over 800 gallons of waste during its first year. Program staff distributed information at five public events and obtained over 200 signature pledges from members of the Southwest Portland community. More information is available at www.portlandonline.com/parks/index.cfm?c=45207.



Community Watershed Stewardship Program Award

The Community Watershed Stewardship Program (CWSP), a partnership between Portland State University, AmeriCorps-Northwest Service Academy, and the Bureau of Environmental Services, provides grant funding for community-based projects in the Portland area. CWSP grants encourage community groups and citizens to get involved in watershed improvement projects and leverage community resources to expand stewardship efforts. Since 1995, the program has dispersed \$490,000 to 133 projects. These funds were matched by \$2.1 million in community support through donations of services, materials and volunteer time.

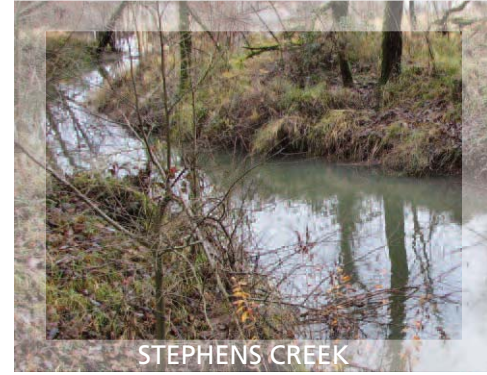
In April 2007, the National Association of State Universities and Land-Grant Colleges and the Outreach Scholarship Partnership selected CWSP as a regional winner for the 2007 C. Peter Magrath/W.K. Kellogg Foundation Engagement Award. The award recognizes outstanding community/university partnerships. More information about the CWSP is available at www.portlandonline.com/bes/stewardship



The Portland City Council in 2006 created the Portland Watershed Investment Fund (WIF), a general fund allocation to implement high priority projects benefiting watershed health. The initiative was a call to action, placing an emphasis on results, leveraging additional funds, and promoting innovation and collaboration within the Portland community on four priority projects.

Stephens Creek Confluence Habitat Enhancement Project

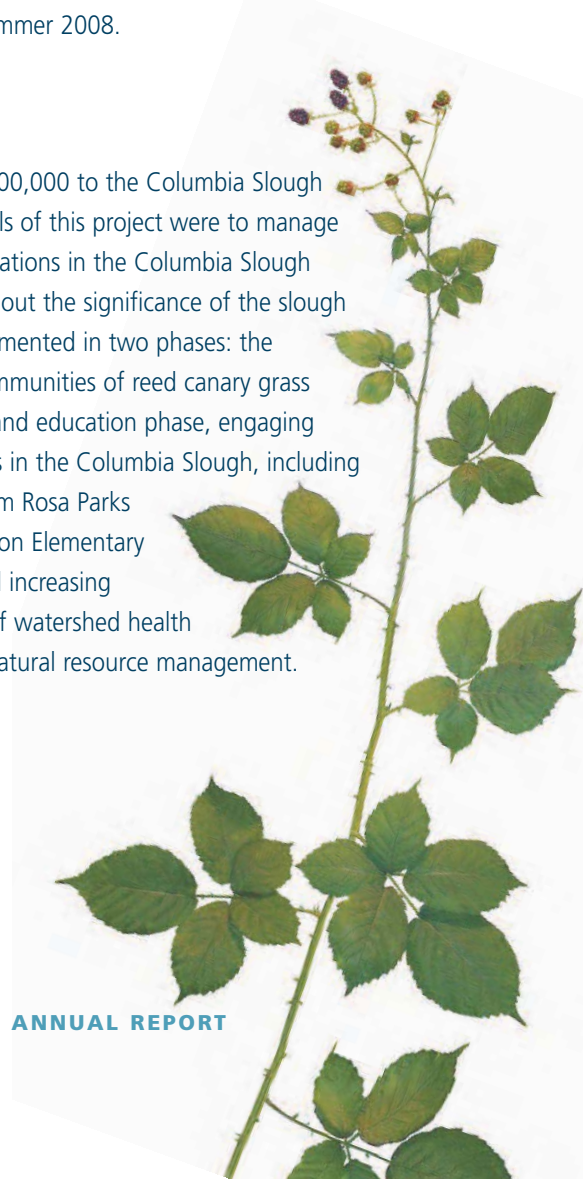
The Watershed Investment Fund awarded \$165,000 to design a habitat enhancement project at Stephens Creek. The project's primary goal is to improve in-stream, riparian and floodplain wetland habitat for the benefit of native fish and wildlife species, with an emphasis on rearing and refuge habitat for juvenile salmonids. The next phase of the Stephens Creek project will receive support from the Watershed Investment Fund in 2008, as well as funding from the Lower Columbia River Estuary Partnership and Portland General Electric. Designs will be completed in Fall 2007, and construction is planned for the summer 2008.

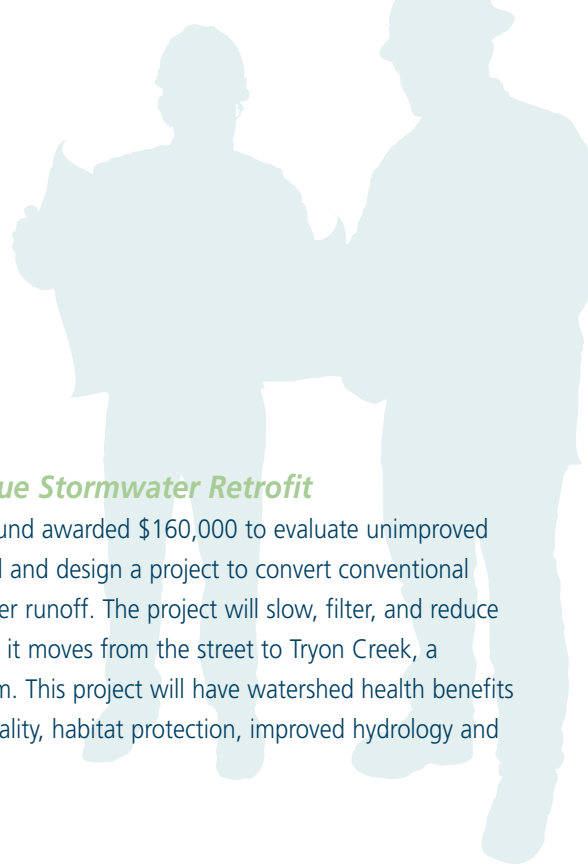


Columbia Slough Invasives

The Watershed Investment Fund awarded \$100,000 to the Columbia Slough Invasive Vegetation Removal Project. The goals of this project were to manage non-native invasive vegetation at multiple locations in the Columbia Slough watershed, and to engage the community about the significance of the slough and natural resources. This project was implemented in two phases: the revegetation phase, addressing dominant communities of reed canary grass and Himalayan blackberry; and an outreach and education phase, engaging

communities in the Columbia Slough, including students from Rosa Parks and Clarendon Elementary Schools, and increasing awareness of watershed health issues and natural resource management.





Southwest 19th Avenue Stormwater Retrofit

The Watershed Investment Fund awarded \$160,000 to evaluate unimproved streets in Southwest Portland and design a project to convert conventional ditches to manage stormwater runoff. The project will slow, filter, and reduce the volume of stormwater as it moves from the street to Tryon Creek, a significant fish-bearing stream. This project will have watershed health benefits including improved water quality, habitat protection, improved hydrology and groundwater recharge.

Hawthorne Hostel Stormwater Project

The Watershed Investment Fund awarded \$75,000 to support the design phase to expand a highly visible stormwater project in Southeast Portland. Since the installation of an ecoroof in 2001, the Hawthorne Hostel has served as a community focal point for stormwater. Funding through the Watershed Investment Fund was awarded to design and install a rainwater harvesting system that would

Summary

In its first year, WIF resulted in the following:

4 projects with 25 local partners

4 outreach events with over 200 attendees

5 school field trips with over 100 students

69.5 acres of habitat managed for invasive species

1,697 native trees and shrubs planted

All but one of these projects is continuing into the next fiscal year. Money from the Watershed Investment Fund has supported phases and components of these projects that, when complete, will result in an additional:

1.2 Million gallons of stormwater managed annually by 12 stormwater facilities

350 feet of sewer pipe removed from high value riparian habitat

347 linear feet of stream channel enhanced for ESA-listed species habitat benefits

5 acres of riparian revegetation to protect stream habitat



allow the stormwater captured to be used by the hostel. This system will reduce stormwater flow to the combined system, and allow the hostel to decrease the amount of water they use, and infiltrate the remaining runoff on site.

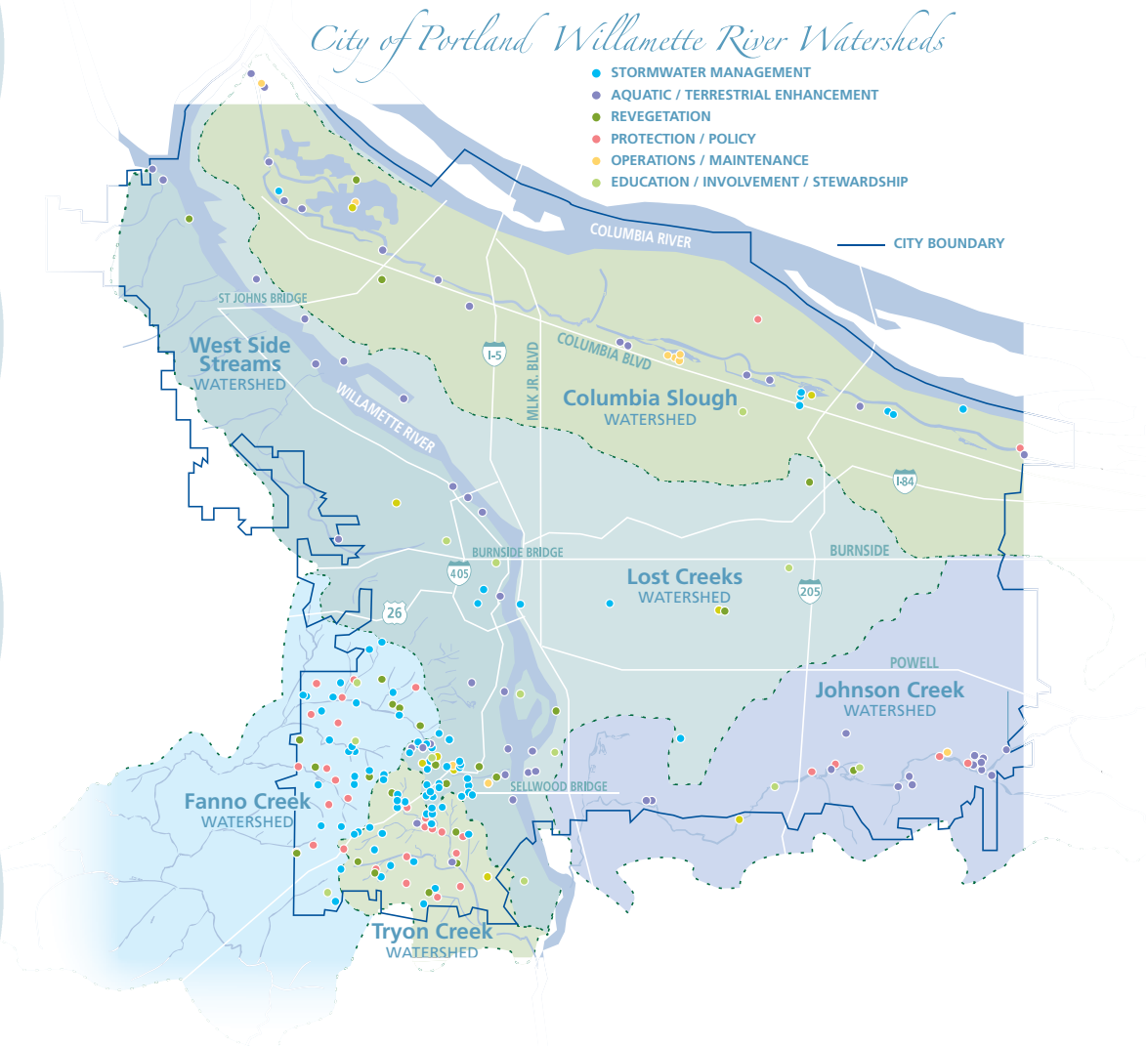


The city manages projects through operating funds, capital funds, and grant funding in addition to the Watershed Investment Fund. The city is implementing strategies in each of Portland's watersheds to address impacts unique to those areas. The city characterized each watershed before developing the PWMP, and uses the characterizations to prioritize strategies and actions. Listings below include examples of work completed in each watershed during the reporting year, as well as priorities for 2008.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">2007 HIGHLIGHTS</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">2008 PRIORITIES</p>	<h3>Columbia Slough Watershed</h3> <p><i>51 square mile watershed - 95 projects</i></p> <p>Columbia Slough Watershed Council outreach and education programs</p> <ul style="list-style-type: none"> • outreach events made contact with over 2,000 people • Slough School reached 4,886 students from 37 schools • www.columbiaslough.org <p>Big Four Corners Restoration</p> <ul style="list-style-type: none"> • BES, Parks, and the Multnomah County Drainage District will partner to restore wetland habitat and function • 150-acre complex owned by the city in upper Slough • includes a 23-acre wetland enhancement project at Winmar Flats to remove invasive vegetation • project design will occur in FY 2008 	<h3>Johnson Creek Watershed</h3> <p><i>54 square mile watershed - 103 projects</i></p> <p>The Brownwood Phase of the East Powell Butte Restoration</p> <ul style="list-style-type: none"> • restored hydrology to 38 acres of Johnson Creek floodplain • provides increased flood storage capacity, improved access to habitat for fish and wildlife habitat, and revegetated riparian habitat • www.portlandonline.com/bes/index.cfm?c=33213&a=158335 <p>East Lents Floodplain Restoration</p> <ul style="list-style-type: none"> • collaboration with the Portland Development Commission with a grant from FEMA • Phase I of the project will improve flood storage capacity and fish and wildlife habitat on 15 acres of the Johnson Creek floodplain • scheduled to be completed in the fall 2009
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">2007 HIGHLIGHTS</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">2008 PRIORITIES</p>	<h3>Fanno and Tryon Creeks Watersheds</h3> <p><i>38 square mile watershed - 104 projects</i></p> <p>Recommendations from the 2005 Fanno and Tryon Creek Watershed Management Plan</p> <ul style="list-style-type: none"> • pre-design report recommended nearly 130 actions to improved the health of these two watersheds and meet various objectives • pre-design will result in project concepts to implement most of the recommended actions • www.portlandonline.com/shared/cfm/image.cfm?id=129808 <p>Many projects from the draft predesign report are ready to be implemented. These projects include:</p> <ul style="list-style-type: none"> • sustainable stormwater projects to manage runoff from 350 acres of impervious surfaces • creation of swales to manage stormwater from 40 acres of streets • land acquisition to protect 110 acres of high value watershed sites • revegetation projects to restore about 60 acres of priority watershed area 	<h3>West Side Streams and Lost Creeks Watersheds</h3> <p><i>69 square mile watershed - 139 projects</i></p> <p>Draft Willamette River Inventory Report completed in 2007</p> <ul style="list-style-type: none"> • is part of the Bureau of Planning's Natural Resources Inventory Update • includes natural resource descriptions and maps for 13 inventory sites in the North Reach • the information will guide future funding and project prioritization • www.portlandonline.com/planning/index.cfm?c=eehef <p>Oaks Bottom Fish Passage Project</p> <ul style="list-style-type: none"> • will restore 9-acres of slough habitat and 15-acres of wetland habitat for ESA listed juvenile Chinook, steelhead and coho salmon, as well as birds and amphibians • Portland Parks and BES are working with Oregon Department of Fish and Wildlife, Willamette Riverkeeper, Verde Native Plant Nursery, Portland Audubon Society, and Urban Greenspaces Institute

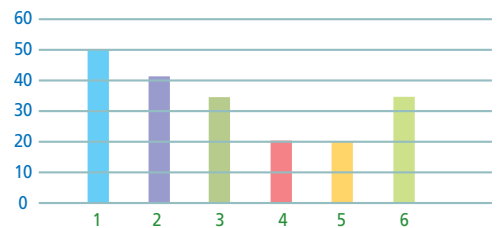
tracking progress

As we continue to develop and collect performance measures for each strategy, our ability to assess individual actions and their collective benefits will improve. As we adapt our strategies to face new challenges, we will be able to monitor improvements to hydrology, physical habitat, water quality, and biological communities.

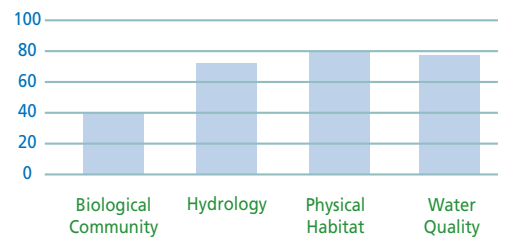


Even at this early stage of implementation, the city is not only taking direct action, but thousands of urban activities are being adapted to reduce watershed impacts. As part of the PWMP Implementation Plan, the city is tracking actions and how they implement the various PWMP strategies. For example, in FY 2007, BES has begun to develop a database to track actions and how strategies are being implemented to achieve the goals of the PWMP (Reference Map above). While the database now only includes part of those outcomes, its development is a great start. We are in the process of expanding it to include actions from all city bureaus, and in future annual reports will include these maps to summarize how our collective actions are prioritized to achieve PWMP goals.

Percentage of Projects by PWMP Strategy



Percentage of Projects by PWMP Goal



Implementation of the Watershed Management Plan calls for adaptive management and an innovative approach. The following is a list of expected challenges that should be considered in the 2008 fiscal year and beyond.

Continued Degradation of Water Bodies and Watershed Function

The City of Portland's growth, the increasing density of the urban center, and continued development and redevelopment in Portland watersheds all have impacts on the ecosystem. As the population grows, the watershed approach will continue to challenge city bureaus to develop policies and innovative approaches to protect our natural resources and halt and reverse trends in watershed degradation.

PWMP Prioritization

Each city bureau has a unique mission. The challenge remains to ensure that the work of every bureau also protects and enhances water quality and watershed functions. There are now many examples in Portland of innovative projects to manage stormwater and protect watersheds, while achieving the various bureau missions.

Performance and Evaluation

The city is in the final stages of creating the implementation structure mandated in the PWMP. One of these final pieces is to establish the mechanisms necessary to show progress toward meeting watershed health goals and objectives. Identifying and adapting performance measures for every strategy is time consuming and involves multiple stakeholders, but is necessary to demonstrate project benefits and progress. It is anticipated that this work will be completed in FY07-08.

Strategies prescribed by the PWMP will become more effective over time as innovative and collaborative methods are evaluated and improved. Each action implemented offers a chance to evaluate methodologies. The performance measures we use to evaluate these actions will be tracked, analyzed, and adapted to indicate the lessons learned in the process.

Funding

The actions described in the PWMP are limited by bureau budgets. The city has benefited from additional funding that allows the development and implementation of watershed projects. BES's Capital Improvement Program and the Watershed Investment Fund have supported priority projects in the past year, but the city will be challenged to develop innovative solutions to funding limitations. A good example is the integration of stormwater management, pedestrian safety, and traffic calming objectives in a Green Streets development. A project of this type can be supported by multiple agencies and budgets, thereby encouraging comprehensive planning and financial efficiencies.

The Annual Report for the PWMP offers a chance to evaluate successes and challenges from the reporting year, and adapt to address these changes for the next fiscal year.

Innovative Redevelopment

When the CSO abatement program is complete in 2011, the city will be managing roughly 78% of Portland's stormwater. By 2040, with current practices and projected city development this amount is likely to remain constant. As properties are redeveloped, the city has an opportunity to integrate watershed protection and restoration actions into property designs. The integration of stormwater facilities, such as vegetated swales, into redevelopment designs will reduce runoff volume by managing stormwater on-site. On a citywide scale, this type of design modification would allow the city to reduce impacts even further.

Implementation Plan

The Implementation Plan for the Watershed Management Plan will continue to improve how the city evaluates the performance of PWMP actions. The Implementation Plan provides the framework for the adaptive management of these actions; performance measures from completed actions are being collected and evaluated to inform the development of future actions. The goal of this approach is to establish a series of defined indicators, targets, and benchmarks, so that we can better link our actions to improvements made in watershed conditions. With this system in place, the methods for collecting and evaluating project performance data will improve over time, resulting in actions that are more efficient and effective at reaching PWMP goals.

Watershed Investment Fund

WIF funding was increased from \$500,000 to \$1,500,000 for the 2007-2008 fiscal year. Funding will support 14 projects with 35 partners throughout the city. Additional projects are being developed to leverage support from community and service groups. In total, WIF projects for FY 08 will result in the following:

- 7 projects completed through the design and permitting phases
- 7 projects completed through the implementation phase
- 234 acres of floodplain and 850 linear feet of riparian area restored with invasive species removal and native plant installation
- 4,800 native plants and trees planted
- 21 stormwater facilities constructed
- Over 1.8 million gallons of stormwater managed



acronyms

BDS Bureau of Development Services
BES Bureau of Environmental Services
BOM Bureau of Maintenance
BOP Bureau of Planning
CSO Combined Sewer Overflow
CSWC Columbia Slough Watershed Council
CWSP Community Watershed Stewardship Program
DEQ Department of Environmental Quality
EPA Environmental Protection agency
ESA Endangered Species Act
PDOT Portland Office of Transportation
PPR Portland Parks and Recreation
SSMP Sustainable Stormwater Management Program
TMDL Total Maximum Daily Loads
WIF Watershed Investment Fund



glossary

Characterization - A documentation of existing (baseline) and historical conditions within a watershed, along with anticipated trends in those conditions. Involves describing problems, watershed assets and the causes and sources of those problems and assets.

Connectivity – Connected, contiguous open space that allows wildlife to move between habitats. Non-contiguous habitat is unable to support the same density of species diversity and population as a similarly contiguous area of land.

Ecoroof – A lightweight roof system of waterproofing material with a thin soil and vegetation protective cover. Ecoroofs can be used in place of traditional roofs.

Impervious Surface - A hard surface area, such as a paved road, roof, sidewalk or structure, which either prevents or slows the entry of water into the ground.

Retrofitting - Structural stormwater management measures for urban watersheds designed to help reduce the effect of impervious areas, minimize channel erosion, reduce pollutant loads, promote conditions for improved aquatic habitat, and correct past efforts that no longer represent the best science or technology.

Stormwater Runoff - Water from rainfall and other precipitation that flows into drainage facilities, rivers, streams, springs, seeps, ponds, lakes, and wetlands as well as shallow groundwater.

Sump - A drain which dissipates stormwater into subsurface soil.

Swale – Also known as bioswale. A long, narrow vegetated depression used to collect and convey stormwater runoff, allowing pollutants to settle and filter out as the water infiltrates into the ground and/or flows through the facility.



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