Portland Watershed Management Plan

REPORT 2008 - 2010




working for clean rivers

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ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

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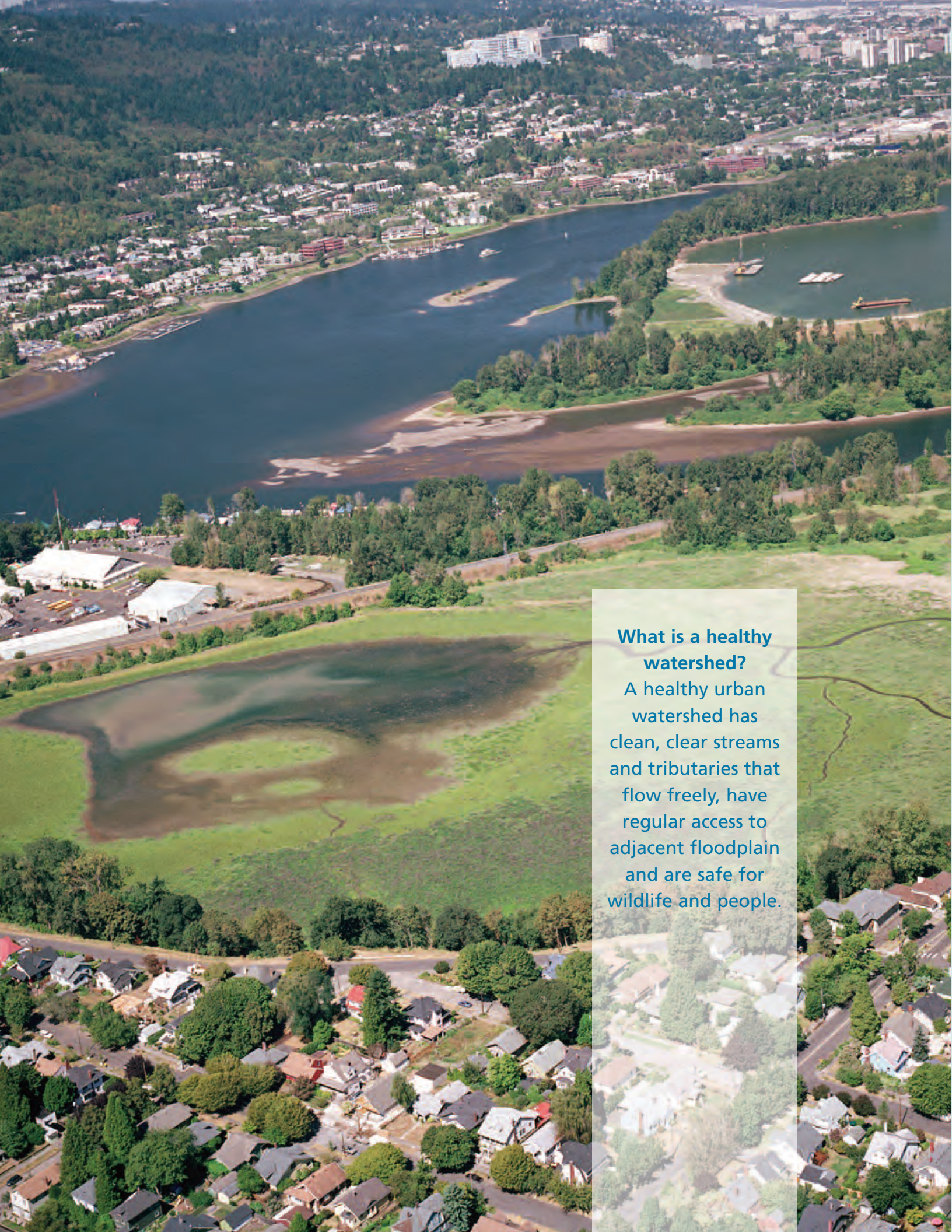
table of contents



What is a healthy watershed?

A healthy urban watershed has clean, clear streams and tributaries that flow freely, have regular access to adjacent floodplain and are safe for wildlife and people.

introduction

In 2005, the City of Portland adopted the Portland Watershed Management Plan (PWMP) to outline goals and strategies for improving water quality and watershed health, and to protect and restore natural resources. This is the fourth PWMP progress report. Figures in this report encompass the 2008/09 and 2009/10 fiscal years. This report highlights the momentum and examples of the work of thousands of community partners including citizen volunteers, watershed councils, nonprofit organizations, other jurisdictions and agencies, and private property owners to improve Portland's rivers and streams. For more information on PWMP goals and strategies see: *www.portlandonline.com/bes/pwmp*.

Why are we doing all of this?

Portlanders have told us[1] that these things are important:

- ✔ Improving the health of rivers and streams for fish, wildlife, and people.
- ✔ Investing in cost-effective solutions to address basic infrastructure needs, such as addressing flooding issues and maintaining and replacing aging infrastructure.
- ✔ Achieving multiple goals in projects: protecting and improving the environment, enhancing neighborhood livability, and supporting public health and recreation while meeting regulatory requirements.
- ✔ Using money wisely by prioritizing projects, cultivating partnerships and community stewardship, and monitoring results.

How are we doing?

Healthy Rivers and Streams: Actions Creating Results

Thanks to community efforts and actions, City work, and other partners, Portland's rivers and streams are showing signs of stabilization, curtailing the decades of steady decline in water quality and habitat. Despite the continued pressures of urban growth, Portland is investing in the right things. Significant achievements include:

- Public infrastructure bureaus and private businesses and homeowners are embracing sustainable stormwater management. Through projects like green streets, swales and ecoroofs, and private property actions through the Clean River Rewards program, over 890 million gallons of stormwater are being managed each year in a natural way, letting it filter through plants and soak into the ground to recharge groundwater supplies.

[1] *Environmental Services and other City bureaus seek public input in a variety of ways, including through public awareness surveys and project and planning-related surveys and workshops.*

- Portland's 20-year program to control combined sewer overflows (CSOs) is nearly complete. The dozens of projects completed since 1991 reduced CSOs to the Columbia Slough by more than 99% and will reduce CSO events to the Willamette River from an average of 50 per year to an average of only four each winter and one every third summer. This reduction in raw sewage and stormwater runoff flowing into the Willamette will mean a significantly cleaner river for people, fish and wildlife. The last CSO control projects, including the East Side Big Pipe, will be completed by December, 2011. The funds for the $1.4-billion CSO program come from fees paid by Portland sewer customers.
- Native salmon and steelhead have been found in all major streams and rivers in Portland (map on page 7). Stream and floodplain restoration projects, like those at Tideman Johnson Park, the Schweitzer area, Kelley Creek, the Stephens Creek Confluence, and Ramsey Refugia are showing results with increased sightings of salmonids[2] and improved habitat for birds and amphibians.

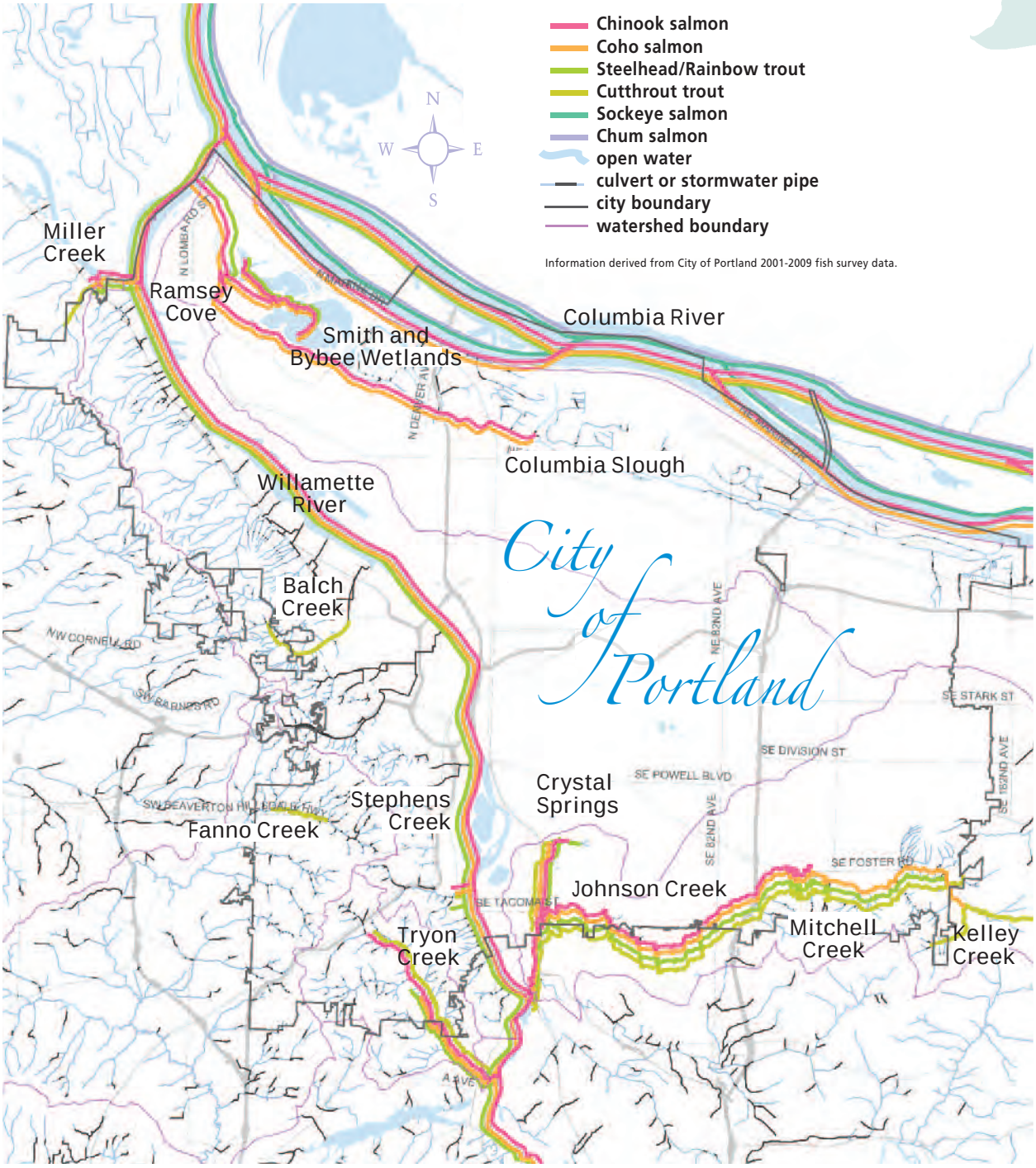
We've come a long way since the 1930s and 40s, when tests showed that juvenile fish died within minutes of coming into contact with polluted water from the Willamette River (to view footage, visit *http://oregonstate.edu/media/cbnnp*). But, there is still much work to do to restore and repair our natural environment as the city grows and climate changes. Working under the context of the Watershed Management Plan, the City of Portland prioritizes projects and resources towards long-term goals, and community energy and stewardship efforts are steadily growing.

Did you know...
According to DEQ, the Willamette River's water quality rating in Portland improved from good to excellent between 2004 and 2009. The DEQ index is based on eight water quality factors, such as temperature and bacteria.

◀ *Healthy rivers and streams in an urban environment are possible.*

[2] Salmonids are the family of fish that includes salmon and trout.

Salmonid distribution in the City of Portland



"improving watershed health is a city-wide effort"

Investing in Cost-Effective Solutions: Making Ratepayer and Tax Dollars Go Farther

Portland's planning and scientific analyses lead to investing in programs and capital projects that integrate green alternatives and traditional infrastructure projects. Green infrastructure is cost-effective, supports healthier natural systems and complements existing "grey" infrastructure systems. Green infrastructure investments aim to manage stormwater at the source, reducing further degradation of Portland's streams and rivers, and involving community volunteers and partner organizations to build forward-looking infrastructure.

Tabor to the River Program

This major infrastructure improvement program began in 2007 to control flooding, basement sewer backups, and CSOs into the Willamette River. The multi-year effort covers 2.3 square miles in southeast Portland, from Mt. Tabor to the river, and involves coordination with several City bureaus. The original design, which took a traditional approach toward repairing and replacing aging sewer lines, was estimated to cost $144 million. When the City redesigned the project into a multi-faceted program using sustainable stormwater management facilities like green streets, tree planting, ecoroofs and rain gardens in addition to necessary sewer pipe upgrades, the estimated price tag dropped by 40% to $86 million. This approach saves ratepayer dollars for other sewer improvement projects in Portland, and enhances watershed health and neighborhood livability. To date, 7,525 feet of pipe have been replaced or repaired, 70 green street facilities have been completed that manage 383,000 square feet, or approximately seven million gallons of stormwater per year, and 307 new street trees[3] have been planted—many by volunteers and area residents. For more information about Tabor to the River: *www.portlandonline.com/bes/tabortoriver*.

Accelerating Implementation of the Watershed Plan

In 2008, City Council approved the Grey to Green initiative, a 5-year, $55 million commitment that accelerated implementation of some components of the PWMP. Specific goals include construction of ecoroofs and green streets, acquisition and protection of sensitive natural areas, tree planting and invasive plant control, and replacing culverts that block fish passage in Crystal Springs Creek. Much of the impetus behind Grey to Green came from the demonstrated cost savings of green infrastructure in the Tabor to the River design, and the desire to avoid future costs of cleaning up rivers and restoring streams. Grey to Green project and program accomplishments are highlighted throughout this report. For more about Grey to Green: *www.portlandonline.com/bes/greytogreen.*

[3] Tabor to the River street trees are included in Grey to Green street tree planting totals.

Achieving Multiple Goals: Projects and Programs That Solve More Than One Problem

Despite increasingly constrained dollars for public works projects, projects that improve watershed health continue to garner the support of multiple City bureaus and community partners. Coordinated planning and funding among partners helps to implement projects and programs that improve our infrastructure and watershed health while meeting other community goals like street safety, increased tree canopy, jobs, and access to green space.

What is green infrastructure?
Green infrastructure includes both built and natural infrastructure that facilitates, mimics, or preserves natural processes for groundwater, surface water, and habitat. Green infrastructure includes sustainable stormwater facilities (green streets, swales, planters and other on-site management), ecoroofs, natural area parks and open space, streams and riparian areas, and urban trees.

Clay Street Project

Environmental Services initiated the SE Clay Green Street Project to respond to the community's request for safer connections from residential neighborhoods to the Willamette River, while addressing existing infrastructure needs and implementing innovative stormwater management approaches to create a route to the river. Connecting people to the Willamette is one of the major river goals articulated in Portland's River Renaissance Strategy (2004).

Clay Street green streets manage stormwater, enhance a 12-block corridor of east/west pedestrian and bicycle connections, and increase the urban street tree canopy while maintaining the business and freight needs of the industrial district. Artist Linda Wysong created a community design plan to enhance neighborhood identity, install art and improve way-finding along the corridor.

Improvements at SE 11th and 12th and Clay Street were done as early action projects in 2008. Environmental Services, the Portland Development Commission and Friends of Trees partnered in 2009 to plant street trees in the project area. Other components of the project are currently in design and are expected to start construction in 2012. For more information online visit: *www.portlandonline.com/bes/greenstreets.*

Ecosystem Services: Benefits to the Community and Economy

A 2009 Environmental Services study of the additional benefits that result from the watershed health investments under the Grey to Green initiative quantified benefits from trees, ecoroofs, and other green infrastructure, demonstrating how these investments help meet multiple goals. Portland's investment in watershed health creates healthy habitat for fish and wildlife, benefits the

community, helps achieve many City and neighborhood goals, and can have positive economic impacts. "Ecosystem services" are the benefits people derive from natural ecosystems, including clean water, air, and food, healthy habitat for wildlife, flood mitigation and stormwater filtration. There are also additional benefits, or services, such as improved public health, energy conservation, and community livability. For example, the green streets, trees and ecoroofs from the Grey to Green initiative could save over 930,000 kilowatt hours (kWh) annually, or enough energy to power 86 homes each year. The full report is available online: *www.portlandonline.com/bes/greytogreen*.

While green street facilities manage stormwater runoff, they also enhance neighborhood livability with green spaces and cleaner air.

Did you know...
one acre of ecoroof (43,560 square feet, or the roof area of 2-4 large commercial buildings) intercepts 552,600 gallons of stormwater, removes approximately 7.7 pounds of air pollution, saves 8,270 kWh of electricity, and reduces or sequesters over 7 metric tons of carbon dioxide each year. Source: Portland's Green Infrastructure: Quantifying the Health, Energy and Livability Benefits (2010)

Green Jobs

Public investments in watershed health provide many opportunities to meet the goals of job creation and social equity. One example is the City's partnership with Verde through the Grey to Green initiative. Verde is a Portland nonprofit organization that improves the economic health of disadvantaged communities by creating environmental job training, employment, and entrepreneurial opportunities for low income people. Verde is a partner in Green Above Ground, a coalition of businesses that Environmental Services contracted with to construct ecoroofs. The Request for Proposals that led to the contract strongly prioritized diversity in employment and contracting. Verde's participation ensures more opportunity for low income people and communities of color in the growing local ecoroof industry. Verde is also a partner in Portland's ambitious tree-planting efforts, providing tree-planting contract services and working in partnership with Friends of Trees in neighborhood tree planting. Over the past two years, Verde's employment/job training opportunities have expanded provided over $365,000 in wages and benefits to participants.

Using Money Wisely: Leveraging Investments and Monitoring Results

City funding for watershed improvements helps leverage private investments, grants and funding from other sources outside the City of Portland, and tens of thousands of volunteer work hours. Local dollars are coordinated to support and complement community efforts, in addition to funding priority projects that will help meet the City's regulatory obligations. Key partners like the US Fish & Wildlife Service, Oregon DEQ, US Environmental Protection Agency, Oregon Watershed Enhancement Board, Lower Columbia River Estuary Partnership, East Multnomah County Soil and

Water Conservation District, Federal Emergency Management Agency (FEMA), US Army Corps of Engineers, the National Oceanic and Atmospheric Administration (NOAA), and Metro help stretch City funding to improve Portland's watersheds.

The City maintains and monitors restoration projects, stormwater facilities, and other projects after construction to ensure performance and inform and improve future projects. In addition to this project-specific monitoring, the Bureau of Environmental Services is implementing an updated monitoring strategy to track changes in overall watershed health in Portland. More information about recent results from sustainable stormwater monitoring and the new watershed monitoring approach is in the *Tracking Progress* section of this report.

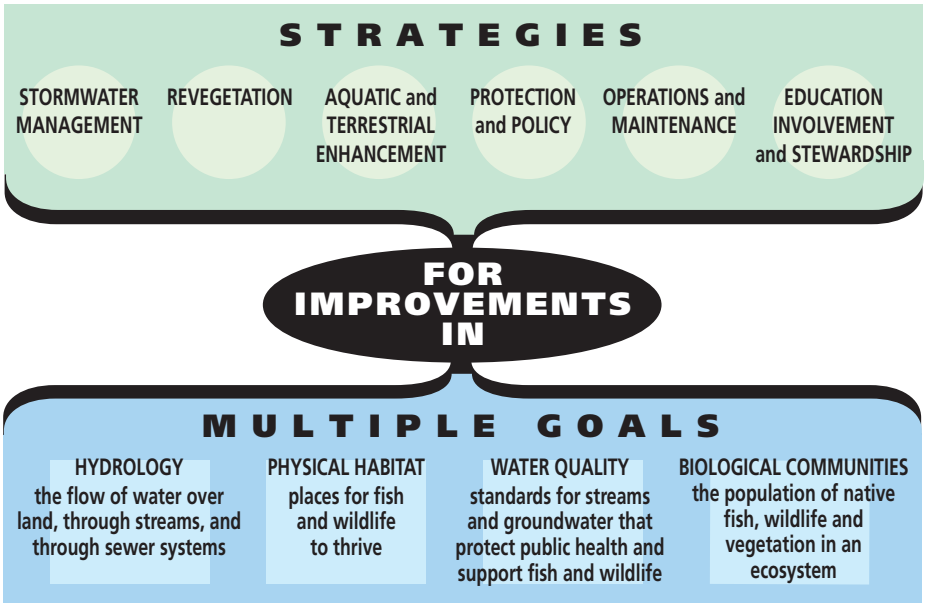
Tryon Creek Confluence Project

Construction was completed in 2010 on a habitat enhancement project at the confluence of Tryon Creek and the Willamette River, a great example of the City and partners coordinating funds to implement significant restoration work. The project includes stream enhancement to improve spawning and rearing habitat for salmon and other native fish, several acres of invasive species removal and revegetation with native plants, and work to reconnect the stream's natural floodplain.

The Oregon Department of Transportation, the City of Portland and other community partners completed an upstream phase of this project in 2008. The City of Portland lead this second phase, which includes partnerships with Metro and the City of Lake Oswego. Environmental Services used $260,000 from its Watershed Investment Fund for design, which helped leverage $343,973 in grants from the Lower Columbia River Estuary Partnership, NOAA's Community-Based Restoration Program, and the Oregon Watershed Enhancement Board. The City of Portland funded the remaining $250,000 for construction, revegetation, maintenance and monitoring of the project as a local economic stimulus project.

strategies and implementation projects

The Portland Watershed Management Plan lays out six strategies that will help reach the Plan's goals for improving watershed health. This section highlights examples of work under each of these strategies.



What is the watershed approach? Rather than focusing projects on single issues or separate regulatory requirements, the watershed approach integrates solutions to address the watershed health goals of enhancing hydrology, habitat, water and sediment quality, and biological communities. This approach guides actions to protect and restore our rivers, streams and open space, develop property redevelopment policies, and maintain infrastructure like roads, sanitary and storm sewer systems.

Innovative design solves stormwater management needs while also allowing for parking and a pleasant streetscape in a busy commercial area on NE 8th and Davis.

Strategy 1: Stormwater Management

Stormwater, Bikes and Pedestrians

Environmental Services and the Bureau of Transportation have partnered for several years to create multi-objective projects that manage stormwater while also providing for pedestrian, bicycle, and automobile safety. Some kinds of stormwater facilities can be utilized to shorten pedestrian crossing distances, realign street intersections, slow traffic, and buffer bicycle lanes.

This green street facility at N Gantenbein and Humboldt is combined with a safer pedestrian crossing to Humboldt School.

Since 2009, Environmental Services has contributed funding through Grey to Green and the 1% for Green Program, and has provided design resources from the Sustainable Stormwater Management Division for nine projects constructed through the Portland Bureau of Transportation's Community and School Traffic Safety Partnership, which resulted in 16 stormwater facilities. Currently, the bureaus are cooperating on eight more projects as part of the Neighborhood Greenways program, which focuses on improving safety along bicycle and pedestrian routes. These projects will result in approximately 72 new stormwater facilities in the next year.

At NE Going and NE 33rd Avenue, Environmental Services and the Bureau of Transportation are coordinating bicycle and pedestrian improvements with green stormwater facilities to create a neighborhood greenway.

What is stormwater?

Stormwater is rainwater in an urban area that runs off from paved streets, parking lots and buildings. In many parts of Portland, stormwater runoff enters the combined sewer system and flows with sanitary sewage to the Columbia Boulevard Wastewater Treatment Plant. Other neighborhoods have a separate storm sewer system. Some stormwater pipes, ditches and channels drain directly to rivers and streams. In some east side neighborhoods, stormwater flows into sumps or drywells that allow the water to soak into the ground. Stormwater can carry pollution directly into rivers and streams, and cause flooding and erosion.

Individual Homes and Businesses Making a Difference

Street and Yard Trees: Street trees provide important stormwater management functions, as well as providing shade, habitat, clean air, and enhancing our neighborhoods. An average street tree intercepts 572 gallons of stormwater[4] each year, which reduces the burden on our sewer and stormwater infrastructure. Portland's street trees save the City over $11 million in stormwater processing

[4] Portland's *Urban Forest Canopy Assessment and Public Tree Evaluation* (2007). Figure is based on all current (including large mature) street trees.

costs annually.[5] The Grey to Green initiative set ambitious goals for tree planting, and programs have ramped up to meet the challenge. Thanks to thousands of volunteers and community partners like Friends of Trees, 5,909 new street trees were planted from 2008 to 2010. The rate of tree planting in fiscal year 2009/10 was 500% higher than tree planting in 2007 (the year before the Grey to Green initiative). Portlanders are also planting thousands of new yard trees on their properties with Friends of Trees or incentives from the Treebate Program. For more information visit: *www.portlandonline.bes/trees.*

Did you know... Portland's average rainfall generates approximately 20 billion gallons of stormwater runoff each year.

Street trees and yard trees intercept rainfall while adding livability and property value to the neighborhood.

[5] *Canopy Assessment* (2007)

Ecoroofs: One of the best ways to manage stormwater is to not let it run off the roof in the first place. The Grey to Green initiative provides incentives for ecoroof construction, as well as technical assistance, outreach and education. From 2008 through 2010, 67 residents and business owners added ecoroofs to their homes and other buildings, creating almost five new acres of ecoroof. Citywide, there are now at least 265 ecoroofs, totaling over 12 acres. Nearly five more acres are currently in design and construction, as more people are recognizing the environmental benefits and cost savings of ecoroofs (ecoroofs last twice as long as conventional roofs). For more Information and resources for ecoroofs visit: *www.portlandonline.com/ecoroofs*.

◀The 831 square-foot ecoroof on the Left Bank Project building near the Rose Quarter manages stormwater while also providing habitat and greenery to this commercial area.

Many homeowners are adding ecoroofs to their homes to manage stormwater and provide habitat for pollinating insects and birds. ▼

Clean River Rewards: Property owners can contribute to watershed health by managing stormwater on their own property, rather than sending it into rivers, streams, or the sewage treatment plant. Clean River Rewards provides a discount to sewer ratepayers who disconnect their downspouts, reduce impervious surface (like pavement or conventional roofs), or manage stormwater onsite through other means. As of July 2010, 34,345 utility ratepayers had registered for the discount on their stormwater bills, and are managing stormwater runoff from more than 111 million square feet of impervious area on private property.

Strategy 2: Revegetation

Invasive Plants Programs: A Multi-Pronged Approach

Implementation of the City's Invasive Plant Management Strategy began in 2008, with funding from the Grey to Green Initiative for three key programs. Complementary code and policy changes are also a part of this comprehensive effort, and are highlighted in the "Protection and Policy" section of this report. Removal of invasive plants such as Himalayan blackberry, English and Irish ivy, and garlic mustard go hand-in-hand with revegetation of natural areas with native plants and trees and ongoing management to keep these areas healthy. Healthy natural areas provide many benefits to the community, are more able to resist erosion, landslides and wild fires, and help support healthy rivers and streams.

Early Detection/Rapid Response: The City's Early Detection/Rapid Response (EDRR) effort focuses on a small number of new, less-established invasive plant species to prevent them from becoming fully-established infestations. It is part of a larger network of EDRR programs in Oregon with the purpose of supplementing existing invasive plant management efforts in the northern Willamette Valley. For the last two years, the initiative has treated and monitored over 200 acres of these species, such as giant hogweed, garlic mustard and knapweed, through coordination with private and public property owners. New species continue to be identified and ranked for potential threat in conjunction with the Oregon Department of Agriculture.

Invasive treatment project.

Protect the Best: Portland Parks and Recreation and Environmental Services collaborate to remove invasive species and revegetate natural areas with native trees, shrubs and plants. The goal of the Protect the Best program is to prevent new infestations of invasive plants in Portland Parks and Recreation's most ecologically healthy areas. Crews treated 2,276 acres of park land over the last two years, and are managing the health of these areas through ongoing treatments.

Y***outh Conservation Crew:*** The Youth Conservation Crew (YCC) program provides work opportunities for youth and involves young people in the process of enhancing natural areas and the urban forest, increases the diversity of the city's workforce, and helps teens develop useful work skills and habits. The program began in 2009 with a combination of funding from Portland Parks and Recreation, Grey to Green, and federal stimulus dollars. Over the past two years, 115 teens were employed for work in invasive plant removal and watershed protection efforts such as fence construction, trail maintenance, and tree establishment efforts. The YCC removed ivy from 1,147 trees in 2010. The program also includes professional contractors who target areas previously cleared by the youth for further invasive species treatment and management. For more information, visit the YCC website: *www.portlandonline.com/parks/index.cfm?c=52587.*

The Oregon Department of Transportation (ODOT) partnered with Environmental Services and Friends of Trees in 2009 and 2010 to plant over 2,500 trees in ODOT right-of-way. These are areas along freeways and highways - often at interchanges - where trees can help manage stormwater runoff, provide habitat and shade, and help mitigate the air quality and noise impacts of highway traffic.

Revegetation Program

Environmental Services works with public and private property owners to manage revegetation efforts on approximately 3,800 acres of natural area and parks through the Watershed Revegetation Program. Protecting native tree canopy and riparian areas and removing invasive species protects Portland's streams from pollution and keeps our urban forest healthier. This is also important in preventing wildfires and erosion. Since 2000, over 2.4 million new native trees and shrubs have been planted through the Revegetation Program.

Forest Park and North Bluff Projects

From 2006 to 2010, Portland Parks and Recreation treated 2,218 acres for invasive species in Forest Park under the Urban Fuel Load Reduction Project funded by FEMA. In addition, volunteers removed ivy from 2,281 trees. Along the North Bluff, 139 acres were treated for removal of invasive species under the same grant program. For more information: *www.portlandonline.com/parks/index.cfm?c=43178*.

Trees and understory on Rocky Butte were smothered by ivy and other invasive plants.

After several years of invasive species removal and revegetation efforts, the forest on Rocky Butte is becoming a healthier natural area with a variety of native plants.

"managing invasive vegetation through coordinated programs and partnerships"

Strategy 3: Aquatic and Terrestrial Enhancement

Columbia Slough Confluence Project

In early 2010, Environmental Services completed a 12-acre restoration project at the confluence of the Columbia Slough and Willamette River at Kelley Point Park (pictured below). The Lower Columbia Slough in Portland provides important off-channel habitat for juvenile salmon traveling to the ocean. The project benefits Chinook and coho salmon and steelhead trout, which are listed as threatened under the Endangered Species Act, as well as Pacific and brook lamprey. The restoration work will also benefit native wildlife species such as neo-tropical migratory songbirds and Western painted turtles. The project was funded by Environmental Services, Portland Parks and Recreation, Bonneville Power Administration, Lower Columbia River Estuary Partnership and NOAA. Project partners, students and trained citizens will help monitor wildlife, fish, plants and the large wood placed by the project. For more information about this project: *www.portlandonline.com/bes/index.cfm?c=33222&a=313948*.

Improving and Protecting Terrestrial Habitat

Work continues on the Terrestrial Ecology Enhancement Strategy (TEES) to create a common body of information and agreed-upon priorities for conservation and restoration of terrestrial plant and animal species and habitats in Portland, within a regional and state context. In 2008-2010, TEES staff studied critical species, including streaked horned larks and amphibians, to help prioritize projects and project areas in an effort to avoid additional Endangered Species Act listings. TEES staff created guidance documents for nesting birds, beavers, snags and other important habitats and species, and developed recommendations to add habitat value to existing projects. For more information on ongoing TEES work: *www.portlandonline.com/bes/fish/index.cfm?c=51052&*.

One of many TEES projects is a joint effort between Portland Parks and Recreation and Environmental Services to restore rare native oak habitat on Elk Rock Island. The project included removing invasive plants, restoring native vegetation, and removing conifers that inhibit oak tree growth (oak release).

Powell Butte Nature Park Restoration

At the Powell Butte Nature Park, Portland Parks and Recreation is reducing wildfire hazard, restoring native plants and wildlife habitat, and maintaining scenic views and grassland habitat over buried water supply facilities. Between 2006 and 2010, the project removed invasive species from 303 acres and completed prescriptive burning on 103 acres. This work was funded with a grant from FEMA. Get more information online: *www.portlandonline.com/parks/powellbutte*.

In coordination with Portland Parks and Recreation, the Water Bureau is enhancing and creating wetlands to increase amphibian habitat at Powell Butte, planting several thousand native trees and shrubs and continuing to remove invasive species. The goal is to help restore oak woodland habitat near the top of the butte. Oak and prairie habitats once dominated the low-lying valley bottoms and foothills of the Willamette Valley, but today, less than 1% of the pre-settlement oak savannah and prairie remains. These habitats are important for migrating neo-tropical song birds and other species.

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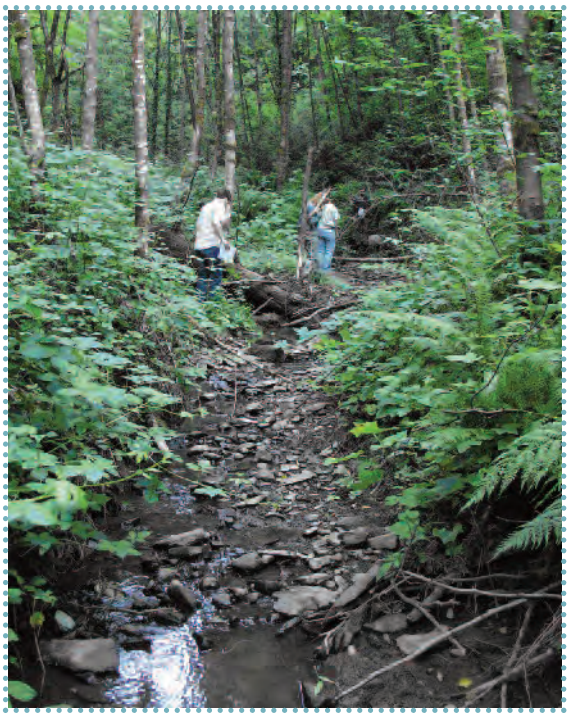
Strategy 4: Protection and Policy

Land Acquisition

Environmental Services, Portland Parks and Recreation, and other bureaus work together to acquire properties with high value for watershed health. Working with Metro, Trust for Public Land, and Columbia Land Trust, the City permanently protects these properties as public lands. The Grey to Green land acquisition program aims to protect over 400 acres of land in sensitive natural areas where development could cause negative impacts like flooding, erosion, and degraded water quality and habitat. These properties also increase public access to green space and can improve neighborhood livability. From 2008 to 2010, the City acquired 68 acres for protection, floodplain restoration, and expanding existing parks and natural areas. Negotiations are underway for future property purchases to protect natural areas.



Portland Parks and Recreation and Environmental Services acquired three acres on Woods Creek in October 2009. Additional parcels have since been acquired adding almost five acres of forested land to Woods Memorial Natural Area in southwest Portland.

In 2009, Environmental Services purchased the Moyer Property, located in the Springwater Wetlands Complex of the Johnson Creek Watershed. The pond supports numerous amphibians including the long-toed salamander, northwest salamander, and Pacific chorus frog.

Invasive Plant Strategy and Code Changes

On August 26, 2009, the City Council approved the Invasive Plant Management Strategy, a multi-bureau, 10-year plan to coordinate invasive species management in the city. Portland has already made progress toward these goals by working with partners and coordinating control and restoration efforts, assessing control priorities, and raising public awareness. Implementation efforts are ongoing, including crafting the City's Invasive Animal Management Strategy. For more about the City's invasive plants efforts: *www.portlandonline.com/bes/invasives*.

A key component of the Invasive Plant Management Strategy was to update the Portland Plant List and invasive plant regulations in City Code. The updated Portland Plant List, including the Nuisance Plant List and a new Required Eradication List, went into effect on July 1, 2010: www.portlandonline.com/bps/plantlist. The City adopted the list to prevent certain plants from becoming widespread in the city. Code changes to Title 29 Property Maintenance Regulations require eradication of these plant species if present anywhere in the City. Changes to Title 33 strengthen requirements to remove invasive species in City-required landscaping and mitigation sites, and for development in environmental overlay zones.

Citywide Tree Project

The City is updating its tree regulations in support of Portland's Urban Forest Management Plan. The Citywide Tree Project will establish a cohesive, consistent regulatory framework for trees in Portland to protect and enhance the urban forest and support the City's environmental, social and economic sustainability goals. The project includes:

- Consolidating tree regulations under a new single code (Title 11, Trees)
- Standardizing and streamlining Portland's tree permit system and creating a simple permit process for homeowners
- Improving standards for tree preservation and planting when development is proposed, without causing undue increases in permitting timelines or development costs
- Improving customer service with a new 24-hour tree hotline, a single point of contact for public inquiries, a community tree manual and an online tree permit tracking system
- Generating at least 100 more acres of future tree canopy per year through improved tree preservation and planting requirements

The Citywide Tree Project proposal includes estimated costs and a budget to fund administration and enforcement of the updated regulations and customer service improvements. Implementation depends on City budget stabilization, but the majority of the ongoing implementation costs can be supported through modest development fee increases. A phased implementation strategy is proposed to provide time for public outreach, development of the tree manual and other informational materials. The project will go to the City Council for consideration and adoption in February 2011. For information on the project: *www.portlandonline.com/bps/treeproject.*

Airport Futures

The City of Portland and Port of Portland are collaborating on an update of the Port's master plan for the Portland International Airport (PDX) and creating a new City land use plan for the area. This long-range planning process started in 2007. In August 2010, the Portland Planning Commission made a recommendation to City Council and, pending concurrence from the Federal Aviation Administration, a City Council hearing on the plan is expected in early 2011. The plan includes an update to the area's natural resources inventory and proposed revisions to the City's environmental overlay zones to increase protection of resources such as open sloughs, wetlands, and riparian corridors. The plan also includes an agreement with the Port for restoration of 300 acres of upland grassland habitat on Government Island as mitigation for future development on airport grasslands. Additionally, the Port committed to $1.8 million in slough enhancement projects and tree planting in the watershed over the next 20 years. For more information: *www.pdxairportfutures.com*.

The natural resources of the Columbia Slough and Columbia River surround Portland International Airport.

River Plan / North Reach

In April 2010, the Portland City Council adopted the River Plan / North Reach, a comprehensive, multi-objective plan for the Willamette River waterfront from the Fremont Bridge to the Columbia River. The North Reach plan replaces the outdated greenway zone and replaces it with a new river environmental overlay zone, updates environmental code to protect and enhance ecological functions and values, and recommends acquisition of key natural resource restoration sites. The plan includes the City's first ecosystem mitigation banks, allowing both public and private entities to offset development in the North Reach river zone. A new landscaping requirement is intended to enhance stormwater management and habitat along the Willamette. Work on the next phase of the River Plan, the Central Reach (Fremont Bridge south to the Ross Island Bridge), is underway now in conjunction with the Central City 2035 Plan. For more information: *www.portlandonline.com/bps/river*.

Strategy 5: Operations and Maintenance

UIC Monitoring and Corrective Actions

The City manages 9,000 Underground Injection Control (UIC) Systems (sumps) that manage stormwater, primarily east of the Willamette River. UICs allow stormwater to infiltrate into the ground where it is cleaned, cooled, and recharges our groundwater. The City has completed five years of UIC monitoring, and data shows that stormwater from public rights-of-way to City-owned UICs meets most drinking water standards. The Decision Making Framework for Groundwater Protectiveness Demonstrations (GWPD Framework) was completed in 2008 to provide a framework for evaluating the potential impacts to groundwater associated with stormwater from urban rights-of-way into permitted City-owned UICs. When the GWPD Framework was applied to a set of City-owned UICs, approximately 140 UICs were shown to be protective of groundwater and received a no further action from DEQ, while 219 UICs with inadequate separation distance from groundwater need to be corrected. Construction is underway now, and will be completed by 2015. For more on Portland's UIC program: *www.portlandonline.com/bes/index.cfm?c=48213*.

Green Street Steward Program

Since 2008, the City's inventory of green street stormwater facilities has grown from 475 to approximately 900. Green streets are now found in most neighborhoods. Since these are more visible than traditional storm drains and pipes, neighbors are increasingly interested in the operations and maintenance of the facilities. Environmental Services is rolling out a Green Street Steward Program that allows residents to partner with the City to help with simple maintenance activities like picking up trash and debris, pulling weeds, and making sure curb openings and overflow drains are clear. The program is not intended to offset the City's responsibility for maintenance, but rather to support volunteers who desire enhanced care of facilities near their homes and to foster stewardship of these public amenities. Volunteer training and a guidebook for green street care were developed in 2010, and a website is available for volunteers to register to adopt a green street: *www.portlandonline.com/bes/greenstreetstewards*.

Strategy 6: Education, Involvement and Stewardship

Community Watershed Stewardship Program

The Community Watershed Stewardship Program (CWSP) is a partnership between Portland State University, Americorps Northwest Service Academy, and Environmental Services that provides grant funding for neighbors, schools, and community organizations to develop and implement their own watershed improvement projects. Since 1995, CWSP has granted $886,300 to 198 projects. As of mid-2010, these funds were matched by $3.1 million in community support through donations of services, materials and volunteer time. Over 39,000 people have donated 311,000 volunteer hours, planted 117,000 native plants and trees, restored over 57 acres of riparian and upland habitat, and enhanced over 36,000 linear feet of streams.

In 2009 and 2010, the CWSP program collaborated with City Commissioner Dan Saltzman to increase outreach to traditionally underserved groups and neighborhoods, and directed a greater portion of funds to stormwater management projects in areas that do not have natural areas and streams.

CWSP projects included naturescaping, depaving for community gardens and stream cleanup

Ecoroof Outreach and Education

Grey to Green initiative funding has increased opportunities for education, outreach and technical assistance for ecoroofs. Since 2008, Environmental Services has hosted technical seminars with nearly 400 attendees, a vendor fair with 60 vendors and 550 attendees in 2010, and has started an Ecoroof Blog that has been visited more than 30,000 times. Growing awareness about the current technologies, benefits, and "how to" of ecoroof construction is encouraging more homeowners, developers, and building owners to utilize ecoroofs. This helps stimulate the local ecoroof industry (designers, contractors and suppliers), boosts the local economy, and positively impacts watershed health.

Ecoroof Vendor Fair

Build it Green and ReTHINK

Over 2,000 people attended Build It Green! Home Tours from 2008 to 2010, and over 500 people attended ReTHINK workshops in 2008. These two annual green building events sponsored by the Bureau of Planning and Sustainability, Water Bureau, and Environmental Services inspire and educate Portlanders about water conservation, naturescaping, rainwater harvesting and sustainable stormwater management. In 2009, the ReTHINK series was changed and the City partnered with a community organization to provide its membership with a series of sustainability-related classes. Topics included green building, water and energy conservation and carbon emission reduction. For more information about these events: www.portlandonline.com/bps.

Tabor to the River: Community Engagement

A major component of the Tabor to the River program is the Education, Communications, Outreach and Public Involvement Plan (ECOPIP). The main goal is to provide all segments of the community and all learning styles a foundation of understanding of the purpose and function of green infrastructure. Since 2008, Environmental Services has used the ECOPIP to engage the community in numerous events including biking and walking tours, targeted education in Tabor to the River area schools on stormwater management and invasives removal, promotion of private property stormwater management and native plant education. A mobile exhibit called the Art of Stormwater has been displayed at coffee shops, libraries and meeting rooms for more than two years in areas where Tabor to the River construction projects are occurring.

The Clean Rivers Education Program offers ➤ K-12 students hands-on classroom and field science programs. Classroom lessons focus on watershed health, water quality, stormwater, and wastewater. Field science programs include watershed investigations, sustainable stormwater tours, and natural area restoration projects. In the last two years, over 34,000 students participated in Clean Rivers Education programs.

tracking progress

Monitoring allows the City to identify and prioritize the most serious threats to watershed health and the resources most in need of protection, measure the implementation and effectiveness of protection and restoration actions, measure progress towards watershed health, and address regulatory requirements of the Clean Water Act, Endangered Species Act, Superfund and other state and federal environmental regulations. Additionally, the City of Portland conducts environmental monitoring to support a broad set of responsibilities ranging from watershed protection and sewage treatment to infrastructure construction and maintenance.

"...are rivers and streams healthier?"

Monitoring Strategy

The City of Portland updated its overall watershed monitoring approach in 2010, incorporating the best available science and protocols developed by the national Environmental Monitoring and Assessment Program. The Portland Area Watershed Monitoring and Assessment Program (PAWMAP) coordinates monitoring across all city watersheds so that information can be more easily compared and trends can be tracked. Elements monitored include water quality, hydrology, toxics, habitat, fish and macroinvertebrates. The effort will also be expanded to include systematic monitoring of terrestrial habitat. In addition, PAWMAP will increase the rigor, accuracy and cost-efficiency of monitoring by streamlining and coordinating field efforts to fulfill many of the City's compliance monitoring requirements. The first year of monitoring will establish baseline data against which future results can be compared to measure changes in watershed health.

Watershed Health Index

Since the PWMP was adopted, efforts have been underway to scientifically and consistently provide an answer to the questions "Are our investments making a difference for watershed health?", and "Are our rivers and streams more or less healthier now than 10 years ago?" It is impossible to look at just one factor, such as E-coli bacteria levels, and make a statement about the overall health of the watershed. The City is using the data gathered through the new monitoring approach to develop a Watershed Health Index. The index will compile that data and other indicators to graphically illustrate changes in watershed health. This will be a tool to consistently track and communicate progress under the PWMP, guide discussions about targets for improvement in local watersheds, and illustrate what investments or activities make the most difference for rivers and streams.

"...are our investments making a difference?"

Stormwater Facility Monitoring

In addition to overall watershed health monitoring, Environmental Services also conducts project- and program-specific performance monitoring. For more than eight years, Environmental Services has monitored and tested sustainable stormwater facilities — ecoroofs, green streets, swales, and planters. Data from this monitoring is critical to quantifying the benefits of these facilities, improving design and function, and lowering construction and maintenance costs for future projects. In particular, facilities are monitored to determine whether they help reduce peak stormwater flow and total flow volume, which has implications for watershed health citywide as well as regulatory compliance in the combined sewer system. Data shows that the majority of sustainable stormwater facilities are meeting their original goals. More information is available in the most recent monitoring report online: *www.portlandonline.com/bes/index.cfm?c=36055&*.

Some of the results include:

- Ecoroofs are showing greater than 50% annual retention of stormwater, which means that half of the rain runoff from a roof that previously went to the treatment plant or into rivers and streams is now captured on the roof.
- Vegetated infiltration facilities (green streets) provide at least a 70% reduction in peak flows during intense storm events, and reduce annual flow volumes by 80%. This helps alleviate infrastructure capacity issues in neighborhoods in the combined and separated sewer systems. They also reduce erosion and pollutant runoff in areas where stormwater flows directly into streams and rivers.
- Soil tests from stormwater facilities show no problematic issues with long-term accumulation of pollutants within the stormwater facility. Environmental Services will continue to collect and analyze this data.

▲ *Environmental Services continually conducts facility-specific and general program performance monitoring. (top left is 2010 monitoring of a green street installed in 2003, top right is testing a rain garden on Sandy Blvd.)*

▼ *Stormwater runoff flows into a green street facility.*

watersheds at a glance

Many watershed improvement and stormwater management projects were done in 2009 and 2010, with dozens more underway or slated to begin in 2011. Here is an overview of projects in each watershed. A site location map with the highlighted sample projects, 6,11, 24, and 37 is on pages 32-33.

Johnson Creek Watershed

Completed:

1 Errol Creek Confluence restoration
2 Powell Butte Natural Area restoration

Current/Future:

3 Springwater Wetlands restoration
4 Veterans Creek acquisition and restoration
5 Crystal Springs restoration
6 East Lents Floodplain restoration

Columbia Slough Watershed

Completed:

7 Slough Confluence habitat enhancement
8 Whitaker Ponds West culvert removal
9 Ramsey Stormwater Wetland enhancement
10 N Central Avenue green street
11 Inverness Wetland enhancement / NE 112th culvert removal

Current/Future:

12 NE 148th water quality facility
13 Mason/Winmar Flats wetland enhancement
14 NE 33rd Avenue culvert replacement
15 Lower Slough Refugia habitat enhancement
16 Rocky Butte Revegetation (on-going)
17 Whitaker Ponds East culvert removal
18 Argay Neighborhood green streets
19 Wilkes Neighborhood green streets

Columbia River

44 Columbia River Pilot Enhancement Project
45 West Hayden Island Natural Resource Inventory

Willamette Watershed

Completed:

20 Tryon Creek Confluence habitat enhancement
21 100th Grey to Green Ecoroof: Solterra Headquarters
22 Portland State University green streets
23 Channel Avenue and N Russell Avenue green streets

Current/Future:

24 Baltimore Woods restoration
25 Stephens Central Canyon water quality facility
26 Oaks Bottom habitat enhancement
27 Willamette Park water quality facility and oak habitat improvement
28 Clay Street project and PCC stormwater facility
29 Tabor to the River project area
30 Elk Rock Island habitat restoration
31 Parks/Environmental Services stewardship partnership (various parks)
32 University of Portland upland restoration

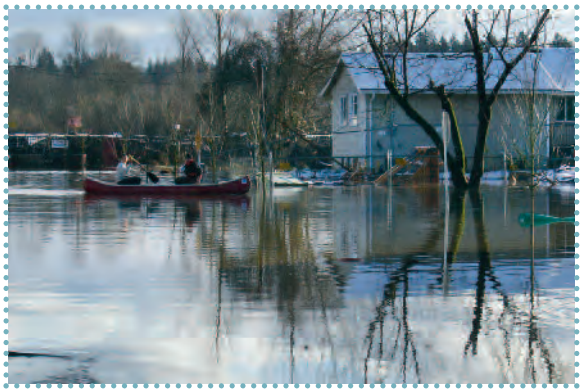
Fanno/Tryon Watersheds

Completed:

33 Multnomah Village/Capitol Highway green streets
34 PCC Sylvania stormwater facility
35 Beaverton/Hillsdale Hwy at SW 35th water quality facility
36 Iron Mountain habitat enhancement and sewer protection
37 ODOT Baldock Maintenance Yard stormwater facilities

Current/Future:

38 Barbur Boulevard Transit Center stormwater facilities
39 Multnomah Arts Center parking lot stormwater retrofit
40 Multnomah Village Core green street
41 Tryon Creek State Natural Area stream enhancement and sewer protection
42 South Ash Creek stream enhancement and sewer protection
43 SW Stephenson and SW Hamilton drainage and road shoulder improvements



6 East Lents Floodplain restoration

The East Lents Floodplain restoration permanently protects and enhances over 50 acres of Johnson Creek floodplain. Foster Road and business and residents near SE 106th Avenue are impacted by flooding almost every year. The East Lents project will reduce the frequency and impacts of flooding, improve water quality and will help restore habitat for salmon and other wildlife. The project will be completed in 2012.

11 Inverness Wetland enhancement / culvert removal

Whitaker Slough is a southern arm of the middle segment of the Columbia Slough. Two poorly functioning culverts in an earthen causeway were restricting flow in this section of the slough, contributing to higher water temperature and frequent algal blooms. In fall 2009, the NE 112th culverts were removed, the banks on either side of the causeway were re-graded, and 3.2 acres of riparian area was treated for invasives and revegetated. The project improved water quality and wildlife habitat.

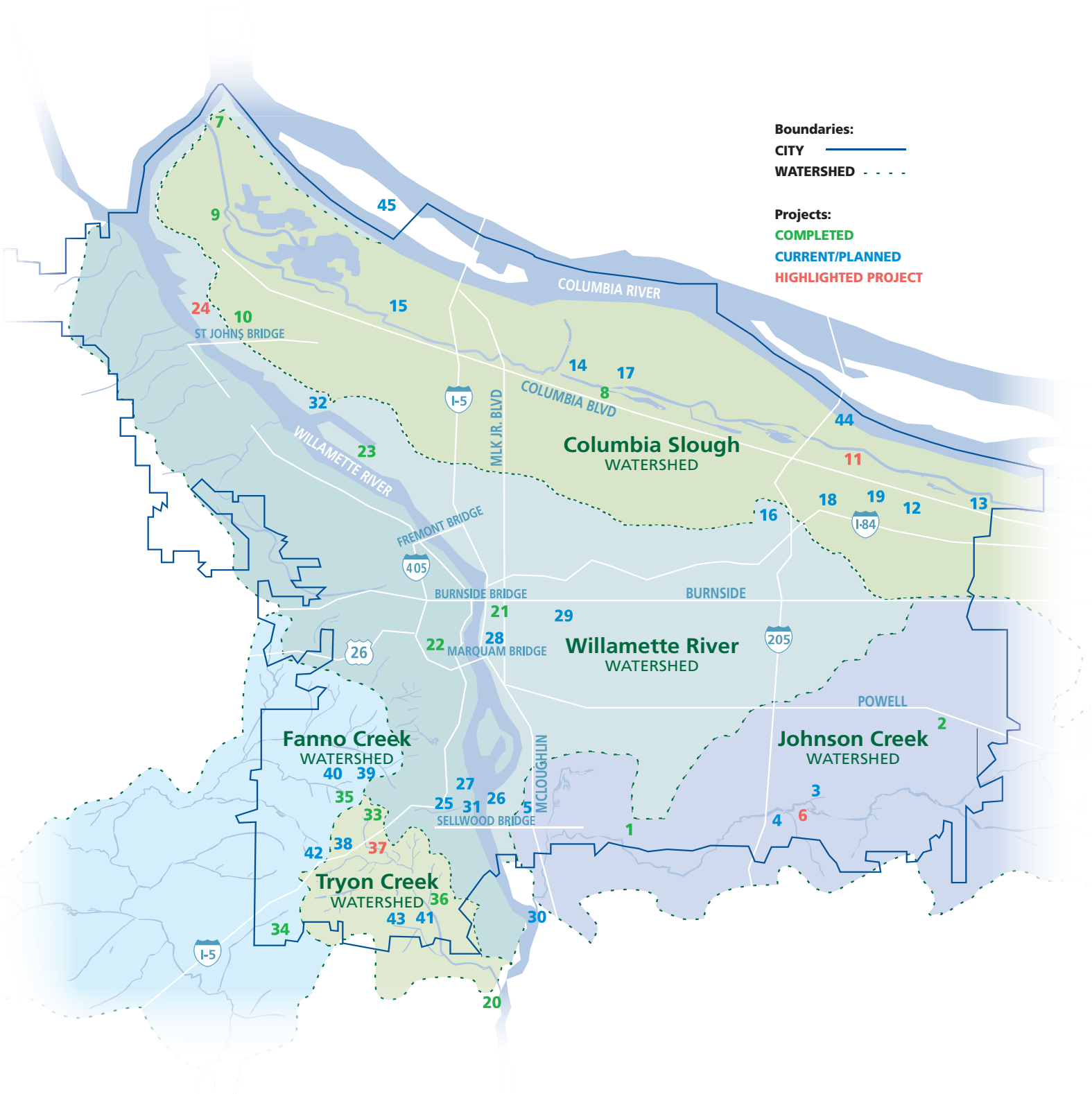
24 Baltimore Woods Restoration

Baltimore Woods is a 30-acre corridor of native oak habitat and the future Willamette Greenway Trail in North Portland. Environmental Services, Portland Parks & Recreation and Metro have been working in coordination with the Friends of Baltimore Woods to help raise awareness within the Cathedral Park and St. Johns neighborhoods. The agencies are supporting the work of the neighborhood friends through the acquisition and restoration work on several properties. The acquisitions will protect the wooded properties from future development. The restoration work will enhance both the aesthetic and wildlife values of the area.

37 ODOT Baldock Maintenance Yard stormwater facilities

Untreated stormwater runoff from the ODOT Maintenance Yard was flowing into Falling and Tryon creeks. Environmental Services used Watershed Investment Funds to design vegetated swales throughout the site to treat stormwater from approximately 130,000 square feet of impervious area to project downstream aquatic habitat and help the City meet regulatory obligations under the NPDES stormwater permit. In 2009-10, ODOT funded and managed the project construction.

City of Portland Project Sites



looking ahead

Several efforts are underway that illustrate Portland's watershed approach coming to fruition, with multiple partners and programs working together for watershed improvement.

Crystal Springs Restoration

In 2007, BES' Grey to Green Culvert Replacement program allocated $2 million to remove fish barriers in Portland. An evaluation by technical advisors from local, state, and federal agencies determined that due to its potential as exceptionally high quality fish habitat, dedicating the entire $2 million for Crystal Springs Creek would yield greater ecological benefits than spreading the funding across multiple projects in multiple watersheds. The Grey to Green funding provides a catalyst for a comprehensive approach to addressing stormwater, hydrology and habitat in the Crystal Springs watershed, and engaging the Crystal Springs community through partnerships with Reed College and Portland State University.

The first culvert replacement project – at SE 28th Avenue – was completed in October 2010. This project, with leadership from Reed College, included re-meandering the creek, removing invasive plants, installing a green street facility, and restoring native habitat.

Using Grey to Green land acquisition funding, Environmental Services purchased a half-acre property and plans to remove a private carport and driveway over Crystal Springs Creek. The project includes removing a culvert, restoring natural floodplain and riparian habitat and replacing grass lawn that now edges the creek. Other planned projects include stream restoration and culvert mitigation at Westmoreland Park; culvert retrofits at Eastmoreland Golf Course, SE Tenino, Umatilla, Tacoma and Glenwood streets and SE Bybee Boulevard; stream and floodplain restoration along this two mile stretch of Crystal Springs Creek; and green street improvements on SE 21st between Tacoma and Umatilla to manage stormwater runoff.

The overall cost of culvert removal in Crystal Springs is estimated at $20 million, which includes removing nine culverts that prevent fish passage between Crystal Springs' headwaters and its confluence with Johnson

Creek. A diverse group of public and private partners are involved in the Crystal Springs program to help leverage the initial $2 million in funding with other grants and in-kind contributions. Some of the key partners in this effort include Reed College, TriMet, Portland Parks and Recreation, the Johnson Creek Watershed Council, Metro, SOLV, the Sellwood-Moreland Improvement League, Friends of Crystal Springs, and Portland State University.

The City is working with community partners to create a sense of place that encourages stewardship of natural resources and neighborhood amenities. This approach to restoration, with many partners and coordinating several projects in one area to create the greatest impact, is a model for future watershed work and a demonstration of the power of catalyst funding.

South Portland Riverbank

The riverbank on the west side of the Willamette River from Willamette Park to Powers Marine Park is one of the few remaining natural areas along the river in Portland, and presents several opportunities for strategic, integrated planning and implementation of water quality, habitat connectivity, and stormwater improvements. In close proximity to Ross Island and the Oaks Bottom Wildlife Refuge across the river, the area has been identified as an important rearing and refuge complex for juvenile salmonids.

The area includes the Stephens Creek confluence, where Environmental Services completed a significant habitat enhancement project for native fish in 2008. Environmental Services and Portland Parks & Recreation also partner with many public and private organizations and citizen volunteers in ongoing efforts to control invasive vegetation, restore native plants, and improve fish and wildlife habitat on the 35 acres and more than 7,000 feet of riverbank in this area.

Portland Parks and Recreation is currently creating a Habitat Management and Trail Plan for several parks along the river: Powers Marine, Willamette Moorage, Butterfly Park and Miles Beach. The plan will identify restoration/enhancement projects for the parks. One specific opportunity is the planned 2012 replacement of the Sellwood Bridge, which will have significant impacts to the South Portland Riverbank area. Environmental Services is working with Portland Parks and Multnomah County to identify mitigation opportunities for project impacts, including replacing a culvert at Stephens Creek that blocks fish passage.

Seven unnamed stream channels meet the river in Powers Marine Park. The streams flow through a series of culverts beneath Highway 43, park trails, and the Willamette Shore Trolley railroad tracks that run through the park. An Environmental Services analysis identified the confluence sites as potential locations for off-channel habitat for fish and other aquatic organisms.

1% for Green Projects

The 1% for Green Program collects one percent of the construction budget of City of Portland projects within the right-of-way that are not subject to the requirements of Portland's Stormwater Management Manual. These funds support green street projects that manage stormwater as well as providing other environmental and community benefits. Seventeen projects have been constructed using 1% for Green funds, and 22 more are slated for construction. Many of these are community-initiated, including these upcoming projects:

- NE Fremont and 9th: A green street adjacent to Irving Park that will improve pedestrian safety between the park and Sabin Neighborhood and will accommodate a future bike boulevard connection through the park.
- SE Lambert-Bidwell pedestrian route ("Park to Park"): A pedestrian safety and stormwater improvement at Lambert and 17th/Milwaukie. This is part of a route for the neighborhood between Westmoreland Park and Sellwood Park.
- Tabor Commons/Café au Play: The project will take stormwater from the street, direct it onto the property, and manage it in a rain garden on the site. The site demonstrates many other sustainable stormwater strategies.

Office of Healthy Working Rivers

The Office of Healthy Working Rivers was established in 2009 to carry forward the work of River Renaissance and the implementation of Portland's five Willamette River goals: a clean and healthy river, a prosperous working harbor, a vibrant waterfront, the river as Portland's front yard, and successful partnerships.

The Rivers Office provides coordination and facilitates collaboration for some of Portland's key river activities and projects. In 2011 and beyond, work includes implementing several key actions of the City's River Plan:

- Creating habitat mitigation banks in the river's North Reach and assisting with early permit coordination for private development;
- Supporting citizen oversight of the North Reach plan implementation;
- Facilitating a comprehensive framework for river recreation—including dock design and placement—among multiple local, state and federal agencies;
- Exploring new ways for Portlanders to experience the river (including through enhanced urban design and a marine heritage center); and
- Promoting opportunities for communities up and down the Willamette to share approaches to river-related issues.

The Rivers Office will also continue work to raise public awareness of river-related issues through its website, *www.portlandonline.com/river*, and by hosting regular River in Focus public brownbag events.

conclusion

As the Portland Watershed Management Plan moves into its sixth year of implementation, there are many accomplishments to celebrate. Improving watershed health is a long-term endeavor that will require decades of focused investment, policy shifts, and community-wide effort. This ongoing commitment is needed to ensure that Portland does not lose ground on its progress in achieving adopted goals.

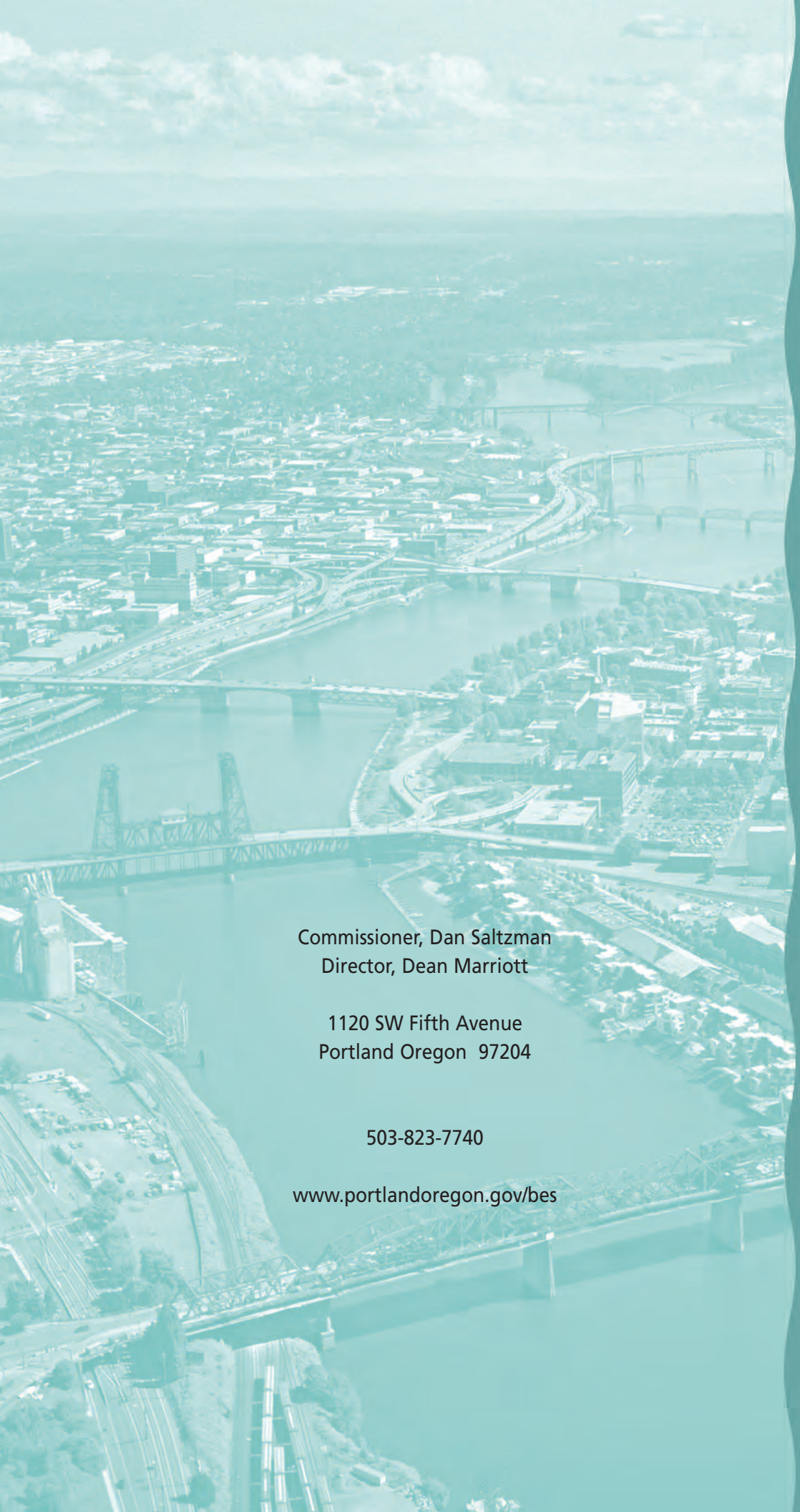
The PWMP will be updated in 2011 with an action plan for the next five years. Opportunities and challenges include expanding work with private property owners to protect and enhance watershed health, further understanding and promoting the role of green infrastructure and natural system restoration in the face of climate change, and expanding education about pharmaceuticals, personal care products and household cleaners that enter our waterways.

The City and partners will continue to cultivate funding sources that catalyze partnerships for innovative projects and continue the programs developed under the Grey to Green initiative, and explore approaches to managing the increasing portfolio of green infrastructure assets. These actions, as well as ongoing stream restoration and sustainable stormwater projects, will help Portland address current and future regulatory requirements while also improving our neighborhoods and watersheds.

PERFORMANCE MEASURES

	FY2007-08	FY 2008-09	FY 2009-10
Strategy 1: Stormwater Management			
*Green street facilities installed**	*304*	*156*	*169*
Ditch to vegetated swale conversions (linear feet)	*103*	*500*	*220*
Private stormwater facilities installed	*394*	*216*	*244*
Clean River Rewards stormwater managed on site (cumulative gallons)	*708,000,000*	*753,000,000*	*779,000,000*
Ecoroofs constructed (acres)*	*not reported*	*3.13*	*1.57*
Strategy 2: Revegetation			
Land treated for invasives (acres)*	*390*	*1,020*	*1,847*
Land planted with native vegetation (acres)*	*104*	*195*	*1,042*
Trees planted in natural areas	*31,050*	*12,952*	*47,024*
*Street trees planted**	*not reported*	*1,800*	*2,898*
Strategy 3: Aquatic and Terrestrial Enhancement			
Streambank restored (linear feet)	*6,775*	*16,408*	*38,418*
Floodplain restored (acres)	*14*	*3.6*	*1.4*
Upland and riparian habitat enhanced or restored (acres)	*232*	*14.3*	*23*
*Culverts replaced or retrofitted**	*2*	*1*	*1*
Strategy 4: Protection and Policy			
Floodplain protected in Johnson Creek (acres)	*1.29*	*5.8*	*8*
Complaint calls to the spill protection hotline	*1,785*	*1,684*	*1,667*
Erosion-control inspections on construction sites	*13,042*	*6,069*	*4,138*
Erosion control cases	*303*	*239*	*60*
Natural area land acquisition (acres)*	*n/a*	*34*	*4*
Strategy 5: Operations and Maintenance			
Inspections of public stormwater facilities	*177*	*359*	*386*
Public stormwater facilities cleaned	*41*	*68*	*130*
Public stormwater facilities repaired	*14*	*10*	*6*
Inspections of private stormwater facilities	*811*	*1,111*	*1,410*
Street swept (miles)	*2,085*	*1,504*	*13,154*
Ditch cleaned (linear feet)	*89,886*	*70,237*	*44,820*
Culverts cleaned (linear feet)	*3,836*	*8,957*	*4,729*
Culvert repaired/constructed (linear feet)	*4,130*	*1,016*	*2,174*
Inlets repaired or constructed	*319*	*216*	*125*
Inlet leads repaired or constructed (linear feet)	*1,800*	*1,693*	*19,053*
Strategy 6: Education, Involvement and Stewardship			
Stewardship grants (number of grants)	*13*	*17*	*16*
Stewardship grants (total amount)	*$60,200*	*$146,903*	*$99,204*
Students reached in classroom and field environmental programs (BES)	*26,371*	*18,999*	*15,879*
Participants in Naturescaping workshops, stewardship projects and community outreach events (BES)	*40,146*	*48,777*	*35,823*
Visitors to the Community Watershed Stewardship Program website	*10,569*	*13,144*	*26,726*
Visitors to the Sustainable Stormwater Management Program website	*102,000*	*135,000*	*234,000*
Visitors to the Clean River Rewards website	*67,000*	*81,000*	*75,000*

** Grey to Green Initiative Measurement*



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ENVIRONMENTAL SERVICES
CITY OF PORTLAND

working for clean rivers