

Watershed Action Agenda:

Priorities for Focus Within the Puyallup River Watershed

2007 through 2011



Puyallup River Watershed Council

“Communities Connected by Water”

Prepared with assistance from Pierce County Public Works and Utilities Water Programs

The mission of the Puyallup River Watershed Council is to provide a forum which gives those in the watershed the opportunity to promote and implement programs that restore, maintain, and enhance the watershed in order to protect its environmental, economic and cultural health.

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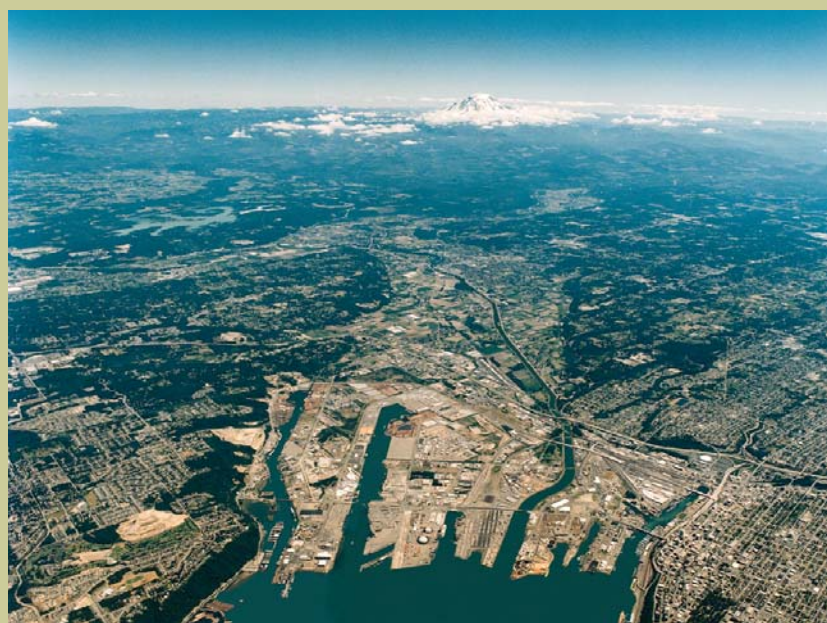
For additional information or to request additional copies of this document, please contact Pierce County Public Works and Utilities, Water Programs Division, at (253) 798-2725, or via email at pc-prwc@co.pierce.wa.us. This Action Agenda is also available on the PRWC website at: www.co.pierce.wa.us/pc/services/home/envIRON/water/ps/prwc/main.htm

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Introduction to the Watershed



The Puyallup River Watershed has been the focus of watershed planning efforts since 1990, when the Lower Puyallup Watershed Management Committee was formed. In 1988, the Puget Sound Water Quality Authority adopted Chapter 400-12 of the Washington Administrative Code. Known as the “Nonpoint Rule,” WAC 400-12 called for counties throughout the Puget Sound region to convene watershed committees, which would then be charged with the development of watershed action plans. The purpose of the watershed plans was to identify sources of nonpoint source pollution within the watershed, as well as to recommend a suite of actions designed to reduce and prevent nonpoint pollution in the future, for implementation by local jurisdictions, state agencies, and other organizations. Two action plans were developed for the Puyallup River Watershed – the Lower Puyallup Watershed Action Plan, which was completed in 1995, and the Upper Puyallup Action Plan, finalized in 2002.

The watershed action planning process was also the genesis of the Puyallup River Water-

shed Council (PRWC), which formed in 1996. While a primary function of the group is to help facilitate and advocate for the implementation of the watershed action plans, the members of the PRWC are broadly dedicated to fostering sustainable communities and maintaining a high quality of life throughout the watershed. Actions taken by the Council are consistent with their mission, which advocates the preservation, protection, and enhancement of the watershed’s environmental, economic, and cultural health. Diverse stakeholder interests actively participate as PRWC members, including local governments, businesses, elected officials, environmental agencies, non-profit groups, and private citizens. (Please see Appendix B of this document for a complete list of PRWC members.)

In addition to the watershed action planning process, the Puyallup River Watershed has also been the focus of a number of other major planning efforts. A salmon recovery plan for the watershed (WRIA 10) was completed in 2005, a corollary requirement of the federal listing of Puget Sound Chinook as threatened

under the Endangered Species Act. The Washington State Department of Ecology continues to develop water cleanup plans for impaired water bodies, as well as administer Clean Water Act implementation programs, such as NPDES permitting. Pierce County basin planning in the watershed is ongoing, with two of the five surface water management plans (Mid-Puyallup and Clear/Clarks Creek) currently completed.

Throughout these planning efforts, Pierce County Public Works and Utilities, Water Programs Division, has been committed to supporting the PRWC by providing resources and staff support. In 2004, Pierce County conducted an evaluation of the four watershed action plans within its jurisdiction, evaluating the actions contained in the watershed plans and identifying those actions with the greatest potential benefit to water quality. Many of those actions are reflected here. King County provides some support to this watershed in the White River sub-basin.

The Puyallup River Watershed Council has developed this 5-year Action Agenda to focus and guide their efforts from 2007 through 2011. The intent of this document is to outline the ten actions identified by the PRWC as deserving the highest priority attention for implementation within the Puyallup River Watershed. Topics addressed within these ten priority actions include riparian restoration, stormwater management, on-site septic system maintenance and repair, and public education programs. These actions have been informed by the watershed action plans themselves, as well as Pierce County's evaluation, and address both point source and nonpoint source pollution. This Action Agenda represents the interests of the Puyallup River Watershed Council to protect and improve the health of our watershed.

The intent of this Action Agenda is to outline the ten actions identified by the Puyallup River Watershed Council as deserving the highest priority attention for implementation over the next five years.

It represents the interests of the Council to protect and improve the health of our Watershed.

PRWC Mission, Goals, and Strategies



Protecting the health of the Puyallup River Watershed is central to the mission of the Puyallup River Watershed Council. Members of the PRWC envision thriving communities, vibrant economies, and healthy ecosystems

within the watershed boundaries, and seek to preserve a high quality of life for the people and wildlife in the watershed.

Puyallup River Watershed Council Mission

The mission of the Council is to provide a forum which gives those in the watershed the opportunity to promote and implement programs that restore, maintain, and enhance the watershed in order to protect its environmental, economic and cultural health.

Because balancing environmental health with a strong and vibrant society is highly complex, the PRWC has identified a total of ten goals upon which to focus. These goals address issues of water quality and wildlife habitat, while also encouraging sustainable patterns of land use and development. The following

goals were developed by the Watershed Council, support the PRWC mission, and represent a consensus of environmental, economic and cultural interests. (Please see Appendix A for a complete list of goals and objectives.)

PRWC Goals

- 1) Water will be clean enough to support beneficial uses and meet or exceed water quality standards for surface and groundwater.***
- 2) The Watershed will support strong and healthy native fish and wild-life populations.***
- 3) Land use and development patterns will be coordinated, effective, and sustainable.***
- 4) Agriculture and forestry are both responsibly practiced and viable.***
- 5) Quality outdoor recreational opportunities will be available.***
- 6) Natural flow patterns and groundwater recharge will be encouraged.***
- 7) Vegetated corridors will be sustained and established throughout the Watershed.***
- 8) Human, animal, and solid waste are responsibly managed.***
- 9) Watershed residents will be educated about water quality issues and will take action to protect, restore, and steward the environment.***
- 10) Local communities and economies will be vibrant and sustainable, and will recognize and support a high regional quality of life.***

The Puyallup River Watershed Council is committed to achieving these goals according to **three strategies**:

1) The members of the PRWC will act to create opportunities for communication, collaboration, and cooperation in partnership with watershed stakeholders.

2) It is the intent of the Council to create an outreach program to inspire and empower citizens to make a difference in their communities.

3) A State of the Watershed Assessment Plan will be utilized to maintain visibility of the current state of the watershed, to identify problem areas, and to track progress.

This Action Agenda was developed to focus the efforts of the Puyallup River Watershed Council, and is intended to help ensure that the actions taken by the Council over the next five years move the group closer to achieving their goals. The PRWC will continue to utilize Pierce County Water Programs Division staff support, and will look to other local jurisdictions, organizations, and citizens to increase their participation and support of the Council's efforts. The members of the PRWC recognize that collective action will most effectively – and immediately – result in collective benefit.

To become involved in the activities of the Puyallup River Watershed Council, or for more information, please contact the Pierce County Watershed Coordinator at (253) 798-2725. And remember: we are communities connected by water!

Priority Action Items 2007-2011



Ten action items were identified by the Puyallup River Watershed Council as deserving high priority attention over the next five years. These action items are intended to reduce nonpoint source pollution, protect overall envi-

ronmental health, and increase public awareness of and involvement in PRWC activities. Each action item is presented in a format that includes:

- **Title**
- **PRWC goals addressed by the action item (“PRWC Goals”)**
- **Brief description of the action, including key components (“Action Description”)**
- **Benefits of action implementation to the health of the watershed (“Benefits”)**
- **Information on implementing entities (“Implementation”)**
- **Means for measuring success (“Monitoring and Performance Measures”)**
- **Preliminary cost information (“Cost Implications and Potential Funding Sources”)**

The action items which follow are presented in no particular order.

Action Item #1:

***Management of Runoff from New Development –
Low Impact Development and Erosion and Sediment
Control on Construction Sites***



Action Description

This action involves two components: (1) supporting and encouraging the implementation of **Low Impact Development** programs in Pierce and King counties and watershed cities to minimize the impact of new development on stormwater runoff, flooding and water quality; and (2) supporting and encouraging the implementation of **Erosion and Sediment Control** (ESC) accepted best management practices (BMP) on new construction to reduce impacts on water quality and sedimentation of spawning habitat.

Low impact development (LID) is a more environmentally sensitive and cost-effective approach to developing land and managing stormwater runoff. Many jurisdictions are implementing LID techniques to help protect their waters and natural resources, and to comply with state and federal requirements for stormwater management. *This action encourages local jurisdictions to develop and imple-*

PRWC Goals Addressed:

- 1. Water quality**
- 2. Healthy fish and wildlife**
- 3. Land use issues**
- 6. Natural flow regimes**
- 7. Vegetated corridors**
- 10. Sustainable communities and economies**

ment LID programs as part of their response to NPDES stormwater requirements and to minimize the adverse impacts from new development.

Erosion and sediment control on construction sites is typically required for all new development. Requirements are contained in stormwater management manuals and compliance is overseen by local governments. *This action encourages local government inspection staff and construction contractors to emphasize the importance of erosion and sediment control during the development phase of projects.* Focus is on implementation of accepted ESC best management practices.

Benefits

The benefits of low impact development include reduced downstream erosion, improved groundwater recharge, reduced wetland, stream and habitat impacts, and improved site aesthetics. It can also lead to reduced site infrastructure and associated costs, reduced maintenance costs, and enhanced public awareness.

The benefits of better erosion and sediment control include reduced impacts on water quality and habitat, and more workable construction sites. The intent is to prevent the transport of sediment to streams, wetlands, lakes, drainage systems and adjacent properties. Sediment transport can result in major adverse impacts, including flooding due to obstructed drainage systems, smothering of salmon spawning gravels, nutrient enrichment of lakes, and turbid water conditions.

Implementation

The primary implementing entities for this action are counties, cities, and construction contractors. This should be implemented where feasible through ordinances, stormwater management manuals, and development standards. It can also be an important part of stormwater management efforts under the NPDES permit for Phase 1 and 2 jurisdictions. Construction contractors also have an important role in implementation. ESC efforts are being implemented by all jurisdictions, but a renewed effort is recommended in 2007-2011 in the Puyallup watershed. Some jurisdictions have initiated LID programs (e.g., Pierce and King Counties), but there is potential to substantially increase the number of projects employing LID techniques.



Monitoring and Performance Measures

Monitoring will consist of surveying local jurisdictions to determine the extent of LID programs in the watershed. ESC requirements for new construction are in place for all jurisdictions, but the extent of implementation varies. A survey of local jurisdictions could be carried out to assess levels of implementation and enforcement. Successful LID pilot projects and model ESC implementation efforts could be recognized. Meadow on the Hylebos is an example of a project that is being monitored for water quality and quantity.

Cost Implications and Possible Funding Sources

The costs to implement this program in the Puyallup watershed vary by jurisdiction and degree of implementation. Pierce County has a half-time LID engineer developing a program and working with developers, design engineers and contractors on LID projects. Smaller jurisdictions could incorporate pilot LID elements into community development, planning or public works departments. ESC requirements are typically included as part of development standards or stormwater management manuals. Implementation and inspection is carried out by developers, contractors, and local government inspection staff.

LID program development is typically funded by Surface Water Management (SWM) utilities and fees from rate payers, and development fees for new development. Typical order of magnitude costs are moderate (\$50-100,000 per year for staff), depending on the size of the jurisdiction. The Puget Sound Action Team has worked with local governments in the region to revise their municipal codes and development standards to include LID. Grants are also available to Puget Sound local governments for LID demonstration projects.

Action Item #2:

Stormwater Management – Facility Maintenance and Retrofitting

Action Description

In the Puyallup watershed, there has been extensive construction of stormwater management facilities over the past 20 years to minimize the impact of new development on flooding and water quality. Examples of stormwater management facilities include detention and retention ponds, biofiltration swales, and infiltration facilities. Maintenance of these facilities is critical to ensure they continue to perform optimally and provide benefits over their useful life. *Local jurisdictions should have inspection programs for both public and private facilities. Inspection and maintenance of facilities should be adequately funded and carried out according to a regular schedule.*

There are many residential neighborhoods and commercial areas in the Puyallup watershed that were built before water quality or detention requirements were in place. As such, stormwater is discharged directly to receiving waters without treatment. Stormwater retrofitting is the process of upgrading an existing facility so that it is able to function more efficiently or provide benefits that its original technology does not support, or constructing a stormwater system or facility in an already built-up area. *During redevelopment, or as pilot and demonstration projects, local jurisdictions should seek opportunities to retrofit stormwater systems.*

Benefits

Properly maintained stormwater facilities function optimally and help protect water quality and reduce flooding. This protects downstream rivers, wetlands, and lakes, as well as

PRWC Goals Addressed:

1. Water quality
2. Healthy fish and wildlife
6. Natural flow regimes

fish and wildlife. Conversely, poorly maintained facilities can sometimes act as a source of pollutants. Retrofitting of already built-up areas can reduce nutrient, bacteria, metal, and trace organic loadings in stormwater. This improves water quality and can help restore or protect beneficial uses, such as recreational uses or fish and wildlife habitat.

Implementation

The primary implementing entities for this action are counties, cities, homeowners' associations, and private businesses. Maintenance is typically required by stormwater drainage regulations and carried out by public works departments or private parties. If the project's drainage facilities are not dedicated to, and accepted by, the local jurisdiction, a property owners' association is typically required to carry out maintenance. An operation and maintenance manual, including a maintenance schedule, should be developed for stormwater facilities. Retrofitting of stormwater facilities is not required by any regulation, but should be encouraged where feasible to assist in attaining water quality standards, as part of Water Cleanup (TMDL) plans, NPDES permit programs, or lake management plans.



Monitoring and Performance Measures

Monitoring will consist of surveying local jurisdictions to document current levels of storm-water maintenance activities. This includes inspection and maintenance of public facilities, and inspection and follow-up monitoring of private facilities. Frequency of inspection and maintenance activities for different facility types should be documented. Retrofitting efforts by local jurisdictions should be documented. Model maintenance and retrofitting programs should be publicly recognized and promoted.

Cost Implications and Possible Funding Sources

The costs to implement this action in the Puyallup watershed vary by size of jurisdiction and number of facilities to maintain. Most maintenance programs are funded by SWM utility fees. The portion of the annual budget devoted to inspection and maintenance programs depends on its overall importance relative to other priorities (e.g., planning, capital

projects, monitoring, and education programs). The percentage of overall budgets devoted to inspection and maintenance may vary from less than 10% to near 50%, depending on the jurisdiction. Typical order of magnitude costs are moderate to high (\$50-100,000 for small jurisdictions to hundreds of thousands of dollars for large jurisdictions). The cost of retrofitting programs is highly variable. Retrofit project costs can vary from tens to hundreds of thousand of dollars, depending on the size and type of facility or area treated.

Action Item #3:

Streamside and Riparian Planting

Action Description

There are numerous creeks, wetlands and lakes that have been stripped of shoreline vegetation and in-stream large woody debris. This action item would target particular stream reaches or wetlands for native revegetation efforts during the next five years to enhance habitat, provide shade over the long term, and stabilize streambanks. *This action involves identifying priority stream reaches, selecting sites for restoration, site preparation, planting, and maintenance as needed to control non-native vegetation and ensure plant establishment.* Projects should be carried out by local "friends of" groups, the Stream Team, local jurisdictions, or private landowners with the help of volunteers, non-profit groups and others.



PRWC Goals Addressed:

- 1. Water quality**
- 2. Healthy fish and wildlife**
- 5. Recreational opportunities**
- 7. Vegetated Corridors**

Benefits

Healthy riparian buffers benefit water quality by controlling erosion and filtering surface water runoff, reducing the amount of sedimentation and nutrients reaching the water body. Native plants along streambanks also provide shade, keeping water cool for fish and protecting water quality. (High water temperatures can negatively impact the amount of dissolved oxygen in the water body, and may result in the designation of the site by EPA as an impaired water body under Section 303(d) of the Clean Water Act.) Vegetated riparian areas are an essential source of habitat for fish and wildlife, not only in upland areas, but also as a source of instream woody debris and habitat features, particularly with respect to juvenile salmonids.

Implementation

The primary implementing entities for this action include PRWC, Counties, Cities, Conservation Districts, "Friends of" groups, and other nonprofit organizations. These organizations will work in close partnership with local land owners and local jurisdictions. Please see Appendix B for a complete list of specific implementing entities.

Monitoring and Performance Measures

Monitoring of this item will consist of site visits to planted areas over the first 5 years after planting to ensure plant establishment and invasive control. Monitoring should be carried out by the lead organization for the planting project, and carried out in association with local groups as feasible. Percent survival of trees and shrubs after three years should be recorded to help judge success of planting efforts and inform future efforts related to this action.

Cost Implications and Possible Funding Sources

The cost to implement this program in the Puyallup watershed will vary according to the particular scope and constraints of each project. Some costs associated with riparian

planting projects, such as the purchase of native plants, may be covered by local jurisdictions or conservation districts. It may be necessary to seek additional funding from grant programs such as SRFB or local Community Salmon Funds for large-scale projects. There is also great potential to utilize volunteer resources for implementing this action item. The typical order of magnitude costs for this type of project are small (\$2000-15,000), depending on area planted, site preparation needs and maintenance requirements.



Action Item #4:

Improved Onsite Sewage System Management

Action Description

Much of the rural and low-density urban areas of the Puyallup watershed are served by on-site septic systems (OSS) for wastewater treatment. Older systems, those that are inadequately maintained, or those in poor soils or high groundwater conditions are more prone to failure, and can cause surface and/or groundwater contamination. Local health departments regulate septic system designs, installation and maintenance. Homeowners are responsible for the proper operation and maintenance of their septic systems.

This action focuses on the following elements: (1) maintenance and educational mailings to onsite septic system owners, (2) a sanitary survey of onsite septic system problem areas, (3) educational workshops, and (4) financial assistance programs to help homeowners repair failing septic systems. This action helps

PRWC Goals Addressed:

- 1. Water quality**
- 2. Healthy fish and wildlife**
- 3. Land use issues**
- 8. Human and solid waste**

ensure that septic systems owners are more educated about their responsibilities, septic system problem areas are identified and addressed, and water quality impacts are minimized.

Benefits

Properly maintained and operating onsite septic systems treat domestic wastewater and help recharge local groundwater. This action targets a higher level of awareness and maintenance on the part of OSS owners, and the



identification of problem areas by local health departments. This should help reduce bacterial and nutrient loadings to creeks and wetlands, and help achieve water quality standards and protect beneficial uses.

Implementation

The primary implementing entities for this action are Tacoma-Pierce County Health Department (TPCHD), Seattle-King County Health Department, septic system pumping service providers, and OSS owners. The first three elements under this action will be implemented in part by TPCHD to comply with new state requirements. In July 2005, the State Board of Health adopted WAC 246-272A and in March 2006, the legislature enacted HB 1458 to support and enhance local jurisdictions' onsite sewage system management programs. Among changes approved were additional siting and design standards and increased focus on system operation and maintenance. The 12 Puget Sound counties must submit onsite sewage system management plans to the Washington State Department of Health (DOH) by July 2007. Management plan topic areas should include: (a) development and maintenance of an inventory of OSS; (b) identification of sensitive areas, including marine recovery areas; (c) operation, monitoring, and maintenance in sensitive areas and marine recovery areas; (d) educating homeowners on their O&M responsibilities; (e) reminding homeowners to complete O&M; (f) enforcing permitting, O&M and repair requirements in the WAC; (g) describing capacity of local health to implement the plan; and, (h) coordinating the plan with the local planning authority.

The fourth element within this action, financial assistance programs to help homeowners repair failing septic systems, is anticipated to be implemented, at least in part, through a new grant and loan project that has been applied for and offered to TPCHD from the Department of Ecology. The project will provide grant

and loan assistance to qualifying low income residents and loan assistance to other qualifying residents to assist in the repair of failing on-site septic systems. This project is being designed to compliment the existing low interest loans available through Pierce County Department of Community Services Housing Programs.

Monitoring and Performance Measures

The monitoring needs and performance measures have not yet been fully developed for this action item. Performance measures may include: the number of OSS educational presentations given; the number of OSS educational materials mailed; the number of sanitary surveys of OSS problem areas; and, the number of low interest loans or grants that were given to property owners with a failing system. Performance measures may also include information on the number of OSS inspections performed and the maintenance measures taken. An action item update every 3-5 years would help gauge the success of this action on improving the proper operation and maintenance of OSS.

Cost Implications and Possible Funding Sources

The costs to implement this action in the Puyallup watershed would largely be borne by the two health departments and OSS owners. Many of the elements of this action are included in the state requirements that counties must complete in 2007. Several staff at each agency are working on the management plans. The cost to individual homeowners of more frequent maintenance (usually pumping), every 3-5 years depends on the current level of maintenance, the type of system, and the location of the system. OSS pumping typically costs between \$200-500, depending on the size of the tank. Full septic system repair or replacement can cost \$5,000-25,000, or more depending on site conditions and design requirements.

Action Item #5:

***Farm Planning
And Best Management Practices Implementation***

Action Description

Small, noncommercial farms, particularly those supporting livestock, were identified in the watershed action plans as a focus area. This effort would emphasize farm planning on small farms and implementation of best management practices (BMPs) (e.g., streamside fencing, barn gutter/downspout systems, paddock areas, manure management). *This action item could include: (1) an inventory of small farms in the watershed, (2) identification of priority sub-basins for implementation, (3) farm site visits and development of farm plans, and (4) implementation of BMPs on small farms based on the inventory and prioritization.* Prioritization criteria could be focused on potential to cause nonpoint pollution, water quality problem areas, and impacts to benefi-

PRWC Goals Addressed:

- 1. Water quality**
- 2. Healthy fish and wildlife**
- 3. Land use issues**
- 4. Agriculture and forestry**

cial uses.

Benefits

Land stewardship efforts and implementation of BMPs on small farms can reduce the adverse effects of agricultural activities on stream and groundwater quality. Landscape erosion, bacterial contamination of streams, and excessive nutrient loads can all be reduced through BMP implementation.

Implementation

This action will be implemented by the Pierce Conservation District (PCD), King Conservation District (KCD), WSU-Pierce County (and King County) Cooperative Extensions, and small farm landowners. The conservation districts both have small farm planners and farm resource specialists that can help small farm owners design a farm plan to meet their needs. The WSU-County cooperative extension can also provide support to land owners. Small farm landowners are ultimately responsible for management of activities on their properties.

Monitoring and Performance Measures

Monitoring for this action could include the number of farm plans requested, completed



and implemented in the watershed, extent of farm plan implementation within two years, and improvements in riparian conditions or water quality (particularly if targeted at a particular sub-basin). More extensive monitoring could involve water quality sampling of runoff before and after farm planning and BMP implementation.

Cost Implications and Possible Funding Sources

The costs to implement this action in the Puyallup watershed would be largely based on requested farm site visits and number of farm plans requested from the conservation districts on an annual basis, and the extent of BMP implementation. The Pierce and King Conservation Districts devote approximately 0.2 and 0.1 FTEs to this watershed, respectively. They typically produce about 3-5 farm plans per year and carry out 30-50 farm site

visits per year. Implementation of BMPs on small farms can be covered by the land owner, supported by volunteer efforts and grants. Farm plan implementation costs range from \$5,000-10,000 for a small farm, but typical implementation levels are \$1000-5,000. Grant sources and cost-share programs include Centennial Clean Water fund and USDA grants, including the Conservation Reserve Enhancement Program (CREP).



Action Item #6:

Preserve and Restore Aquatic and Terrestrial Habitat

Action Description

Preservation of existing high-quality, functioning aquatic and terrestrial habitats is one of the most cost-effective means of protecting individual species, species diversity and ecosystems. Restoration is appropriate where streams, rivers, wetlands or upland areas have been degraded by human activities. The Puyallup River watershed is home to many species of salmonids including Chinook, coho, chum, and pink salmon, and steelhead, bull and cutthroat trout. Chinook and bull trout are listed under ESA and steelhead are proposed for listing. In addition, there are numerous types of wildlife (such as amphibians, reptiles, mammals, birds and insects) that inhabit the watershed.

This action focuses on (1) participating in the Salmon Recovery Funding Board (SRFB) funding process in WRIA 10/12, (2) supporting preservation and restoration efforts focused on habitat acquisition, habitat enhancement, and fish passage, (3) working on estuarine and marine nearshore issues in the Lower Puyallup and Commencement Bay, and (4) supporting ongoing work focused on biodiversity management areas.

Benefits

Most conservation and environmental management efforts identify preservation of existing high-quality habitats as one of the highest priorities. There is a growing need to provide for both species in peril as well as keeping common species common. Areas where such species occurrence overlaps may be considered biologically diverse (e.g., biodiversity

PRWC Goals Addressed:

- 1. Water quality**
- 2. Healthy fish and wildlife**
- 3. Land use issues**
- 5. Recreational Opportunities**
- 6. Natural flow regimes**
- 7. Vegetated corridors**
- 9. Public education**

management areas.) This is true for aquatic and terrestrial habitats, as well as overall ecosystems. Restoration and enhancement of degraded habitat is also important to improve existing conditions for fish and wildlife and increase connectivity of habitats. This is best accomplished through restoring natural processes wherever feasible. High-quality, functioning habitats help support the overall food chain (including predator-prey relationships), nutrient cycling and species diversity.

Implementation

This action will be implemented by the PRWC, watershed counties and cities, tribes, WDFW, Pierce County Biodiversity Alliance (PCBA), PCD, "Friends of" groups, Cascade Land Conservancy and other non-profit organizations. Agencies and organizations are encouraged to participate on the WRIA 10/12 citizen advisory committee and technical advisory group in support of SRFB funding. Local governments, tribes, resource agencies and others are encouraged to preserve and restore aquatic and terrestrial habitats in their jurisdictions or areas of interest. Preservation can be



achieved through acquisition, conservation easements, and critical area regulations. Local jurisdictions, tribes, resource agencies, the Port of Tacoma, Citizens for a Healthy Bay, Puget Creek Restoration Society, Friends of Hylebos Wetlands, and others are focused on estuarine and marine issues. The PCBA is leading efforts to monitor species located within biodiversity management areas (BMAs) in the watershed and work with the property owners in these areas to encourage stewardship actions that promote conservation of species. As BMAs are addressed in the Puyallup watershed, the development of local groups (e.g., Friends of the Lower White River) will be encouraged to help support these efforts.

Monitoring and Performance Measures

Monitoring for this action could include tracking the number of acres of habitat protected and restored over the next five years, as well as monitoring the number of stewardship plans written specifically for biodiverse areas that focus on the needs of fish and wildlife. More involved monitoring could include evaluating the success of various aquatic, terres-

trial, estuarine and marine restoration projects. Monitoring (e.g., Bioblitz inventory) at one or more additional BMAs in the watershed is encouraged by 2011.

Cost Implications and Possible Funding Sources

The costs to implement this action in the Puyallup watershed vary widely by the type of action and funding (e.g., federal, state, tribal, local, etc.). SRFB funding comes from federal and state sources and local match is typically provided by project sponsors. WRIA 10 has received between \$0.5-1.0 million annually. Participation in the SRFB process on the CAC/TAG is covered by agencies and organization, or volunteer effort. Acquisitions, conservation easements and implementation costs of critical area regulations also vary widely. There are also many additional grant sources that may be available to support these efforts (e.g., Community Salmon Fund, state IAC grants, etc.). Biodiversity inventories may be funded privately or through government agencies, grant programs, museums, and universities.

Action Item #7:

**Water Quantity Management
(Flooding and Water Supply)**

Action Description

Mainstem river flooding on the Puyallup, Carbon, and White Rivers, and localized flooding of smaller drainages threaten property and public safety. Groundwater extraction and surface water diversions affect stream flows, groundwater levels, and surface-groundwater interactions. *This action seeks to raise awareness about these significant water quantity issues that are affected by floodplain development, hydro-modifications, population growth, and demand for water supply.* The PRWC will provide a Forum for discussion of these topics to educate citizens about these and related issues. *This action may also include support of and participation in a possible US Geological Survey study characterizing and simulating water resources in the Puyallup River Watershed (possible study beginning in 2008).*

Benefits

Water quantity issues including flooding, water flow in streams, and water supply are important topics for this watershed. A better understanding of natural conditions, as well as human influences on flooding, groundwater recharge and instream flows will help decision makers and citizens make more informed management decisions.

Implementation

The primary implementing entities for this action, in terms of promoting flood awareness and managing emergencies, are Pierce County Emergency Management, King County Water and Land Resources, and river valley

PRWC Goals Addressed:

- 2. Healthy fish and wildlife**
- 3. Land use issues**
- 6. Natural flow regimes**
- 9. Public education**

cities. The Department of Ecology is also involved in flood management and plays a key role in water rights decision making and the granting of new water rights or water right transfers. Local water purveyors are involved in water conservation efforts. The USGS and other partners may be participants in the possible study. The PRWC can provide a Forum



for discussion of these topics and help in educating the public.

Monitoring and Performance Measures

Data collection and monitoring for this action includes real-time stream gauging for flood forecasting, water level monitoring of wells and geophysical surveys both by USGS and local governments. This action could also include survey of residents to track knowledge of important flood awareness or water quantity supply issues.

Cost Implications and Possible Funding Sources

The cost to implement this action varies by implementing entity. Pierce and King County

have well established and funded flood and emergency management programs. The cost to implement the USGS study is expected to be \$800-900,000 based on a similar 4-year study (2006-2010) in the Chambers-Clover Creek watershed. The effort needed by the PRWC to support Forums and discussion of these topics is nominal.



Action Item #8:

Education, Outreach and Public Involvement

Action Description

This action involves six components: (1) providing a monthly Forum for discussion of important watershed topics; (2) sponsoring tours of the watershed; (3) staffing booths at fairs and other community events; (4) publishing watershed newsletters; (5) providing public input to local governments in the implementation of their projects; and (6) working with schools on specific projects (e.g., "I am Clarks Creek" education booklet). Also included in

**PRWC Goals Addressed:
9. Public education**

Benefits

Focused education and outreach efforts will increase public awareness of watershed issues. The intent of this item is to engage Puyallup River Watershed residents in connecting



this item are any advertisement or publicity activities associated with the promotion of the above six components. Working with local jurisdictions and non-profit organizations (e.g., Citizens for a Healthy Bay, Trout Unlimited) to leverage efforts is desirable.

human action to watershed health. By encouraging and facilitating changes in behavior over time, a strong public outreach program would minimize the impacts of everyday human activities on water quality, water quantity, and wildlife habitat.



Implementation

The primary implementing entities for this action include the PRWC, Counties, Cities, Conservation Districts, “Friends of” groups, the Washington Department of Ecology, and other local organizations. Please see Appendix B for a complete list of specific implementing entities.

Monitoring and Performance Measures

Monitoring of this item will consist of assessing whether functions associated with this action item are well attended and received by members of the public and government agencies. Monitoring will be the responsibility of the PRWC, will be conducted on an ongoing basis, and will shape future efforts connected to this task. A successful education and outreach program will be reflected by increased public attendance at monthly Forums and other watershed events, as well as increased distribution of the PRWC newsletter.

Cost Implications and Possible Funding Sources

The cost to implement this education and outreach action (program) in the Puyallup watershed is likely to be covered by the implementing entities noted above and volunteer efforts of PRWC members. A total of approximately 0.5 – 1.0 FTE of paid staff and volunteer effort is estimated to be expended on this action. Additional resources would allow the program to be expanded to reach more people, or increase the number of products or outputs. Additionally, there is great potential to utilize volunteer resources for implementing this action item. Current level of effort is small to moderate cost compared to other actions.

Action Item #9:

Monitoring and “State of the Watershed” Assessment

Action Description

A variety of monitoring is occurring in the watershed to measure various parameters and environmental conditions. A “State of the Watershed” assessment is proposed as a way to compile information on key indicators to measure change or trends over time. Proposed indicators for the Puyallup watershed fall into two categories: (1) environmental; and (2) economic/social/cultural. A pilot effort focusing on 8-10 indicators is being developed in 2006-2007.

This action would select and track these watershed indicators over the 5-year timeframe of this Action Agenda to measure the “State of the Watershed” and monitor trends and conditions that influence watershed health. The in-

**PRWC Goals Addressed:
All PRWC Goals**

tent is for these indicators to be assessed at the watershed or sub-basin level, or at discrete points within the watershed. Indicators under consideration are:

Environmental

1. Overall Stream Health (as measured by benthic index of biotic integrity, B-IBI)
2. Salmon (adult returns to White River Buckley Trap) – this will be explained in the context of important qualifiers, e.g., harvest, ocean conditions, and habitat



issues

3. Water Quality Conditions (impairment per 303(d) list) – could include fecal coliforms, temperature, dissolved oxygen, etc., or the State’s “Water Quality Index”
4. Water Quantity (flow) - % of years that meet instream flow targets
5. Songbird Diversity (# of species observed, for instance during the Christmas bird count)

Economic/Cultural/Social

6. Land Consumption per developed housing unit
7. Percent of jobs that pay a livable wage for a family of two/four
8. Sales of locally produced food at farmers market (# of farmers markets in WRIA 10)
9. Transportation – percent of commuters in various classifications (single occupancy vehicles, high-occupancy vehicles, transit, bicycles, other)
10. Solid Waste – Percent of the solid waste stream that is recycled

Benefits

Monitoring of water quality, aquatic biota, habitat, as well as land use, jobs and transportation issues will help us measure the success of implementation efforts over time by establishing baseline conditions, detecting problems, and tracking trends. By tracking watershed indicators, actions can be assessed for effectiveness and benefits, and revised as needed to achieve targets or desired outcomes.

Implementation

It is expected that data and information to be included in the “State of the Watershed” assessment will be collected by others. B-IBI data are being collected by Pierce and King

County, salmon data are being collected by the tribes and WDFW, and water quality data are being collected by the tribes, Pierce and King County, Department of Ecology, and Pierce Conservation District (Stream Team). Water quantity data are being collected by USGS, and Pierce and King County, and bird count information is being collected by Audubon. Economic/cultural/social data are being collected by Pierce County, state government, and local chambers of commerce. TPCHD has also developed an environmental health indicator program to track trends and assess environmental conditions. The watershed assessment will be completed by the PRWC, with assistance from committees and interested partners.

Monitoring and Performance Measures

As noted above, monitoring is expected to be carried out by multiple parties and compiled for the assessment by the PRWC. The intent is to complete annual or bi-annual “State of the Watershed” assessments that are understandable by the public. A key measure of success will be public education and better understanding of watershed trends.

Cost Implications and Possible Funding Sources

The cost to implement this action is likely to be minimal, as the cost of data collection related to the indicators is currently covered by many implementing entities. There will be costs associated with printing and distributing of annual or bi-annual assessments to the broader public.

Action Item #10:

Build Puyallup River Watershed Council Capacity

Action Description

This action will consist of three primary components: (1) increasing participation on the Watershed Council, its activities and committees through active recruitment of new members, including participation from cities and non-profit organizations; (2) increasing coordination with the PRWC Foundation to pursue grant and other funding opportunities to support PRWC activities; and (3) actively seeking staff support from current non-participating jurisdictions.

Benefits

There is a desire to build the capacity of the Puyallup River Watershed Council to affect positive change within the watershed. Increased participation would enable the Council to direct more attention, resources, and effort to watershed activities, while fostering a greater sense of community among Puyallup River watershed residents. Enhanced staff support from other jurisdictions will help ensure overall implementation of this Action Agenda.

Implementation

The primary implementing entity for this action is the PRWC. By continuing to provide support to the watershed council as in the past, Pierce County will assist with the implementation of this action item.

Monitoring and Performance Measures

Monitoring for this item will consist of tracking changes in the number of participants and

PRWC Goals Addressed:
All PRWC Goals

number of supporting jurisdictions in PRWC Forums, committees, and other activities, as well as assessing whether utilized modes of communication are effective in terms of public recruitment. Monitoring will be the responsibility of the PRWC, will be conducted on an ongoing basis, and will shape future efforts connected to this task.

Cost Implications and Possible Funding Sources

The cost to implement this program in the Puyallup River watershed will vary according to the particular jurisdictions and level of implementation. Many costs associated with this action item are minimal or are currently covered by implementing entities. In addition, there is great potential to utilize volunteer resources for implementing this action item.



Appendix A

PRWC Goals & Objectives

Please note: These goals and objectives provide a framework to guide the actions. More detail on these goals and objectives will be defined in annual workplans and for specific projects.

- 1) Water will be clean enough to support beneficial uses and meet or exceed water quality standards for surface and groundwater.**
 - a) Surface water quality will meet or exceed Washington State Water Quality Standards (WAC 173-201a as amended).
 - b) Macroinvertebrate sampling will show greater diversity.
 - c) Drinking water will require minimal treatment for safe consumption by humans.
 - d) Groundwater will meet or exceed Washington State Water Quality Standards (WAC 173-200).
 - e) Reduce the number of impaired 303(d) listed water bodies.

- 2) The Watershed will support strong and healthy native fish and wildlife populations.**
 - a) Maintain or increase the diversity of native fish, wildlife, and bird species found in the Watershed.
 - b) Reduce the number of species listed as threatened or endangered under the Endangered Species Act.
 - c) Increase the number of stream miles available for wild, native fish populations.
 - d) Increase the amount of acreage identified as available habitat for wildlife.

- 3) Land use and development patterns will be coordinated, effective, and sustainable.**
 - a) Riparian and wetland buffers will be adequate to protect beneficial uses.
 - b) Foster a high rate of compliance with county and local city Comprehensive Plans, Development Regulations, and Critical Areas Ordinances.
 - c) Foster a high rate of consistency and coordination between agencies and jurisdictions.

- 4) Agriculture and forestry will be both responsibly practiced and viable.**
 - a) Increase the rate of farm plan completion and utilization of best management practices.
 - b) Increase the rate of implementation of “fish friendly” logging and other best management practices.
 - c) Decrease the rate of conversion of farm- and forestland to more urban uses.
 - d) Sustain or increase amount of acreage in agricultural and forest land taxation.

- 5) Quality outdoor recreational opportunities will be available.**
 - a) Promote a healthy and stable sport fishing industry.
 - b) Promote a healthy and stable outdoor recreation industry.
 - c) Increase non-consumptive recreational use of private and state forestlands.
 - d) Increase the quantity and connectedness of improved trails.

- 6) Natural flow patterns and groundwater recharge will be encouraged.**
 - a) Reduce levels of property loss compared to previous flood events of similar size.
 - b) Decrease amount of resources spent on repeat failures of flood control structures.
 - c) Storm events will result in lower and longer peak flows in local streams.
 - d) Reduce amount of impervious land cover.
 - e) Increase diversity of instream habitat available.
 - f) Increase acreage of undeveloped floodway.
 - g) Groundwater recharge will approach natural rates.
 - h) Ensure water quantity is sufficient to support the needs of people and fish.

- 7) Vegetated corridors will be sustained and established throughout the Watershed.**
 - a) Increase native vegetative land cover.
 - b) Increase number of miles of connected, vegetated riparian and upland areas.

- 8) Human, animal, and solid waste will be responsibly managed.**
 - a) Promote optimal treatment quality for sewage systems (e.g., tertiary systems) by using state-of-the-art technology.
 - b) Reduce inflow and infiltration (I/I) in municipal wastewater collection systems
 - c) Decrease rate of on-site sewage system failures.
 - d) Reduce illegal dumping incidents.
 - e) Increase rate of recycling by Watershed residents through creating more opportunities for recycling a wider variety of wastes.

- 9) Watershed residents will be educated about water quality issues and will take action to protect, restore, and steward the environment.**
 - a) Increase participation by Watershed residents in Stream Team and/or habitat restoration events.
 - b) Increase participation in programs like the Backyard Wildlife Sanctuary Program.
 - c) Encourage shift in local sales away from hazardous household and garden products in favor of environmentally friendly alternatives.
 - d) Promote environmental education for youth in schools and communities.

- 10) Local communities and economies will be vibrant and sustainable, and will recognize and support a high regional quality of life.**
 - a) Increase percentage of commute trips using carpools or other transit options.
 - b) Increase percentage of houses and buildings using "green" technologies.
 - c) Increase application of "low impact development" technologies in new development and site design.

Appendix B Implementation Matrix & PRWC Members

Implementing Entity and Corresponding Areas of Jurisdiction	#1: New Development/LID	#2: Stormwater Mgmt.	#3: Riparian Planting	#4: Onsite Septic Mgt.	#5: Farm Planning/BMPs	#6: Preserve/Restore Habitat	#7: Water Quantity Mgmt.	#8: Education/Outreach	#9: Monitoring/Watershed Assessment	#10: Build PRWC Capacity
Puyallup River Watershed Council			X			X		X	X	X
Pierce County Water Programs	X	X	X	X		X	X	X	X	X
King County Water/Land Resources	X	X	X		X	X	X	X	X	
Pierce Conservation District			X		X	X	X	X	X	
King Conservation District			X		X	X		X	X	
Puyallup Tribe			X			X			X	
Muckleshoot Tribe			X			X			X	
Tacoma-Pierce Co. Health Department				X				X	X	
Seattle-King Co. Health Department				X				X	X	
Tacoma	X	X	X			X	X	X	X	
Puyallup	X	X	X			X	X	X		
Bonney Lake	X	X	X	X		X	X	X		
Sumner	X	X	X			X	X	X	X	
Edgewood	X	X	X			X	X	X		
Fife	X	X	X			X	X	X		
Auburn	X	X	X			X	X	X	X	
Milton	X	X	X			X	X	X		
Pacific	X	X	X	X		X	X	X		
Buckley	X	X	X			X	X	X		
Enumclaw	X	X	X			X	X	X	X	
Orting	X	X	X			X	X	X		

Implementing Entity and Corresponding Areas of Jurisdiction	#1: New Development/LID	#2: Stormwater Mgmt.	#3: Riparian Planting	#4: Onsite Septic Mgt.	#5: Farm Planning/BMPs	#6: Preserve/Restore Habitat	#7: Water Quantity Mgmt.	#8: Education/Outreach	#9: Monitoring/Watershed Assessment	#10: Build PRWC Capacity
South Prairie	X	X	X			X	X			
Wilkeson	X	X	X			X	X			
Carbonado	X	X	X			X	X			
Washington Dept. of Ecology	X	X					X	X	X	
Washington Dept. of Fish and Wildlife						X		X	X	
Washington Dept. of Transportation	X	X				X				
Puget Sound Action Team	X					X		X	X	
USDA Forest Service		X	X			X	X	X	X	
Boeing	X	X	X							
Master Builders	X									
Port of Tacoma	X	X	X			X			X	
South Puget Sound Salmon Enhancement Gp.			X			X				
Friends of Clarks Creek			X			X		X	X	
Fennel Creek Preservation Group			X			X		X		
Friends of Swan Creek			X			X		X		
Pierce County Biodiversity Alliance						X		X	X	
Non-profits (e.g., CHB, CLC, Trout Unlimited, Audubon, etc.)			X			X		X		

Appendix C

List of Acronyms

BMA	<i>Biodiversity Management Area</i>
BMP	<i>Best Management Practice</i>
CAC	<i>Citizen Advisory Committee</i>
CREP	<i>Conservation Reserve Enhancement Program</i>
EPA	<i>United States Environmental Protection Agency</i>
ESA	<i>Endangered Species Act</i>
FTE	<i>Full-Time Equivalent</i>
ESC	<i>Erosion and Sediment Control</i>
HB	<i>Washington State House Bill</i>
IAC	<i>Washington State Interagency Committee for Outdoor Recreation</i>
KCD	<i>King Conservation District</i>
LID	<i>Low Impact Development</i>
NPDES	<i>National Pollutant Discharge Elimination System</i>
OSS	<i>Onsite Septic System</i>
PCBA	<i>Pierce County Biodiversity Alliance</i>
PCD	<i>Pierce Conservation District</i>
PRWC	<i>Puyallup River Watershed Council</i>
SKCHD	<i>Seattle-King County Health Department</i>
SRFB	<i>Salmon Recovery Funding Board</i>
SWM	<i>Surface Water Management</i>
TAG	<i>Technical Advisory Group</i>
TMDL	<i>Total Maximum Daily Load</i>
TPCHD	<i>Tacoma-Pierce County Health Department</i>
WAC	<i>Washington Administrative Code</i>
WDFW	<i>Washington Department of Fish and Wildlife</i>
WRIA	<i>Water Resource Inventory Area</i>
WSU	<i>Washington State University</i>

Appendix D **Image Citations & Sources**

<u>Page</u>	<u>Image Citation & Source</u> *
Front Cover	Carbon River at 177th Street E., Orting. Feb 2006.
3	The mouth of the Puyallup River and aerial view of the Puyallup River Watershed. Courtesy of Port of Tacoma.
5	Confluence of the Puyallup and Carbon rivers, near Orting. Feb 2006.
7	Planting event at WSU-Puyallup, along Clarks Creek. April 2006.
8	Drainage bioswale planted with native plant species, High Point Neighborhood, Seattle. Sept 2006.
9	Drainage bioswale running parallel to pervious asphalt sidewalk, High Point Neighborhood, Seattle. Sept 2006.
11	Storm water detention and water quality pond, Woodbridge Lexington Hills neighborhood, near Diru Creek. Dec 2005.
12	Planting event at WSU-Puyallup, along Clarks Creek. April 2006.
13	Planting event at South Prairie Creek Preserve, along South Prairie Creek. Oct 2006.
14	Onsite septic system drainfield for new residential construction. Courtesy of TPCHD.
16	Hogfuel paddock, Northwest Halal goat farm, along South Prairie Creek in Orting. June 2006. Courtesy of Pierce Conservation District.
17	Electric fence BMP workshop, Key Peninsula-Gig Harbor-Islands Watershed. Courtesy of Pierce Conservation District.
18-19	The Puyallup River Watershed (WRIA 10).
21	Clarks Creek, near the Puyallup Hatchery, Puyallup. April 2006.
22	Road closure due to flooding, intersection of 90th St. E. and Canyon Rd. E., in the Summit area. 12/2005.
23	The mainstem Puyallup River after the Election Day Flood, Sumner. 11/2006.
24	The PRWC executive committee at the 2006 Livable Communities Fair, Puyallup. April 2006.
25	Mouth of Fennel Creek, taken during the Fennel Creek Tour. Oct 2006.
26	B-IBI invertebrate sampling at Fennel Creek. Sept 2004.
29	PRWC Forum, Sumner City Hall, Sumner. 2005.

* Unless otherwise noted, all photos are courtesy of Pierce County Water Programs.



Puyallup River Watershed Council
Pierce County Public Works and Utilities
Water Programs Division
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