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CITY OF SUMNER

Shoreline Restoration Plan Element

Prepared for:
City of Sumner

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1.0 INTRODUCTION

This report supports the development of a restoration element to the City of Sumner's Shoreline Master Program (SMP). Last amended in 2004, the SMP is being updated to comply with the Shoreline Management Act (SMA) requirements (RCW 90.58), and the State's SMP guidelines (Washington Administrative Code [WAC] 173-26, Part III), which went into effect in 2003.

The SMP guidelines require that local governments develop SMP policies that promote "restoration" of impaired shoreline ecological functions and a "real and meaningful" strategy to implement restoration objectives. The City's shoreline inventory and characterization report (ESA Adolfson, 2010) identifies which shoreline ecological functions and ecosystem processes have been impaired. In updating its SMP, the City is required to identify and plan for ways to restore or enhance those functions and processes that have been impaired. In the context of the SMP, planning for shoreline restoration includes establishing goals and policies, working cooperatively with other regional entities, and supporting restoration through other regulatory and non-regulatory programs.

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1.1 Regulatory Background

1.1.1 Role of Restoration under the Shoreline Management Act

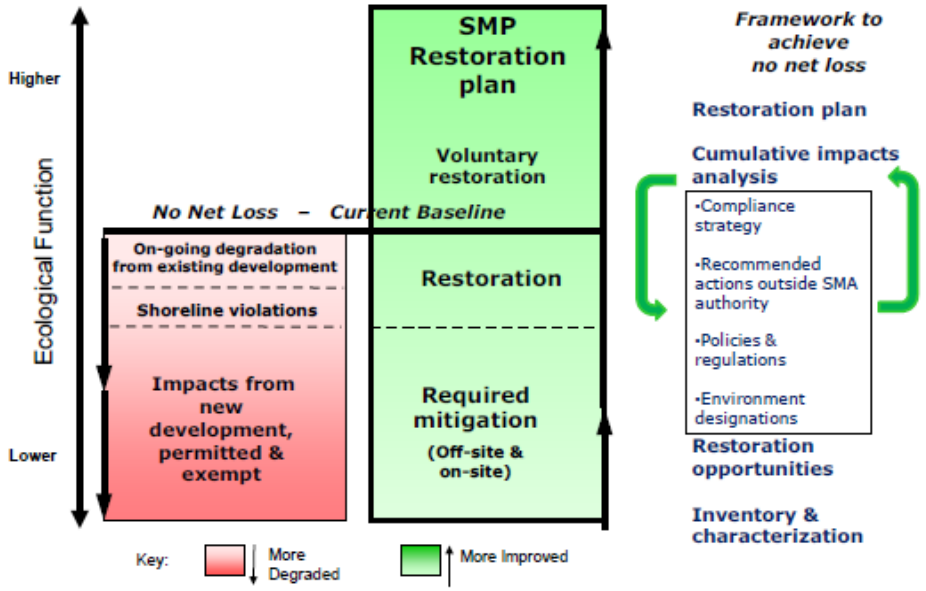
The State has directed local governments to develop SMP provisions "...to achieve overall improvements in shoreline ecological functions over time when compared to the status upon adoption of the master program." This overarching goal is accomplished primarily through two distinct objectives:

- **Protection** of existing shoreline functions through regulations and mitigation requirements to ensure "no net loss" of ecological functions from baseline environmental conditions; and

- **Restoration** of shoreline ecological functions that have been impaired from past development practices or alterations.

Figure 1 below illustrates the role of the SMP update in achieving no net loss both through mitigation and restoration.

Figure 1. Achieving No Net Loss of Ecological Function



Source: Department of Ecology

The concept of no net loss of shoreline ecological function is embedded in the SMA and in the goals, policies and governing principles of the shoreline guidelines. The State's general policy goals for shorelines of the state include the "protection and restoration of ecological functions of shoreline natural resources." This goal derives from the SMA, which states, "permitted uses in the shoreline shall be designed and conducted in a manner that minimizes insofar as practical, any resultant damage to the ecology and environment of the shoreline area." The governing principles of the guidelines further clarify that protection of shoreline ecological functions is accomplished through the following (WAC 173-26-186):

a) Meaningful understanding of the current shoreline ecological conditions;

b) Regulations and mitigation standards that ensure that permitted developments do not cause a net loss of ecological functions;

c) Regulations that ensure exempt developments in the aggregate do not result in net loss of ecological functions;

d) Goals and policies for restoring ecologically impaired shorelines;

e) Regulations and programs that fairly allocate the burden of mitigating cumulative impacts among development opportunities; and

f) Incentives or voluntary measures designed to restore and protect ecological functions.

It is important to note that the restoration planning component of the SMP is focused on voluntary mechanisms, not regulatory provisions. Restoration planning is focused on economic incentives, available funding sources, volunteer programs, and other programs that can contribute to a no net loss strategy. However, the restoration framework developed for these non-compensatory mitigation projects can also be applied to compensatory mitigation projects. In this way, all efforts to improve ecosystem functioning are coordinated, and will be designed to work together.

1.1.2 Role of Federal Regulations in Restoration

The Endangered Species Act (ESA): The federal ESA addresses the protection and recovery of federally listed species. The ESA is jointly administered by the National Oceanic and Atmospheric Administration (NOAA) Fisheries (formerly referred to as the National Marine Fisheries Service [NMFS]), and the United States Fish and Wildlife Service (USFWS). Restoration opportunities identified in this plan may benefit ESA listed species that are present in the White and Puyallup Rivers.

National Marine Fisheries Service Biological Opinion on National Flood Insurance Program (NFIP): In September 2008, a Biological Opinion issued by the NMFS determined that the effects of certain elements of the NFIP throughout Puget Sound is likely to *jeopardize* the continued existence of the following species listed under the ESA: Puget Sound Chinook salmon, Puget Sound steelhead, Hood Canal summer-run chum salmon, and Southern Resident killer whales. The Biological Opinion also determined that NFIP is likely to *adversely modify* the following ESA designated critical habitats: Puget Sound Chinook salmon, Hood Canal summer-run chum salmon, and Southern Resident killer whale critical habitats. The biological opinion provides a *reasonable and prudent alternative* which can be implemented to avoid jeopardy and adverse modification of critical habitat. In response to the Biological Opinion, the Federal Emergency Management Agency is in the process of developing guidance for NFIP participating communities, which includes the City of Sumner. The Biological Opinion establishes a 2010-2011 timeline for compliance for all NFIP participating communities within the Puget Sound Basin (NMFS, 2008).

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1.2 Defining Restoration

There are numerous definitions for "restoration" in scientific and regulatory publications. Specific elements of these definitions often differ, but the core element of repairing damage to an existing, degraded ecosystem remains consistent. In the SMP context, the WAC defines "restoration" or "ecological restoration" as:

> *"…the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions"* (WAC 173-26-020(27)).

Using the WAC definition of restoration in regard to state shorelines, it is clear the effort should be focused on specific shoreline areas where natural ecological functions have been impaired or degraded. The emphasis in the WAC is to achieve overall improvement in existing shoreline processes or functions, if such functions are degraded or impaired. Therefore, the goal is not to restore historically natural conditions, but rather to improve on existing, degraded conditions. In this context, restoration can be broadly implemented through a combination of programmatic measures (such as surface water management, water quality improvement, public education) and site-specific projects (such as revetment replacement and/or riparian plantings). Therefore, this restoration planning element focuses on the City as a whole rather than parcel by parcel, or permit by permit.

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1.3 Key Elements of Restoration Planning in the SMP Update Process

The State guidelines provide six key elements for shoreline restoration planning as part of a local jurisdiction's master program, as outlined in WAC 173-26-201(2)(f). These elements are summarized below in Table 1, and provide the organization and content for this report.

Table 1. Restoration Planning Elements

	Key elements for the shoreline restoration planning process WAC 173-26-201(2)(f)	Section in this report
1	Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration.	Assessment of Functions (Sec. 2); Restoration Opportunities (Sec. 4)
2	Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions.	Policy Development (Sec. 5)
3	Identify existing and ongoing projects and programs that are currently being implemented that are designed to contribute to local restoration goals such as capital improvement programs (CIPs) and watershed planning efforts (WRIA habitat/recovery plans).	Existing Plans and Programs (Sec. 3.2)
4	Identify additional projects and programs needed to achieve local restoration goals, and implementation strategies including identifying prospective funding sources for those projects and programs.	Assessment of Functions (Sec. 2); Restoration Opportunities (Sec. 4)
5	Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals.	Implementation (Sec. 6)
6	Provide for mechanisms or strategies to ensure that restoration projects and programs will be implemented according to plans and to appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals (e.g., monitoring of restoration project sites).	Implementation (Sec. 6)

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2.0 ASSESSMENT OF FUNCTIONS

Shoreline restoration planning begins with the identification of "degraded areas" or areas with "impaired ecological functions." The assessment of existing degraded areas and/or functions relies on the *Sumner Draft Shoreline Inventory and Characterization Report* (ESA Adolfson, 2010). The City's inventory and characterization report examined riparian ecosystem processes that maintain shoreline ecological functions and identified impaired ecological functions. The findings of the inventory and characterization are summarized below.

2.1 Regional Setting

The City of Sumner is located in Pierce County, approximately 12 miles east of Tacoma and 34 miles south of Seattle at the confluence of the Puyallup and White (Stuck) Rivers in WRIA 10. A portion of Lake Tapps is located within the City's urban growth area (UGA). Both rivers and Lake Tapps are designated as shorelines of statewide significance and are the only shorelines that are addressed in the Master Program.

2.2 Physical and Ecological Processes

The City's shoreline jurisdiction is defined by the surface geology and hydrology of the valley floor of the White and Puyallup River basins, as well as their major tributaries and contributing streams. The headwaters of both the upper Puyallup and White Rivers are predominantly located within the Mt. Rainier National Park, Mount Baker-Snoqualmie National Forest, and private commercial timberlands. Both rivers originate from glaciers on Mount Rainer. The landscape has been heavily influenced by frequent flooding and periodic mudflows from Mount Rainier, which have historically covered the valley with layers of mud, silt, ash, and glacial debris. The most recent mudflow (named the Osceola mudflow) occurred in the valley about 5,600 years ago. The broad floodplains of both river systems have created a vast mosaic of fluvial materials and silts eroded from headwater sources.

The White River subbasin originates at the terminus of the Winthrop, Fryingpan and Emmons glaciers on the slopes of Mt. Rainier and drains an area of approximately 494 square miles. Flowing from its origin to the confluence with the Puyallup River,

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the White River is approximately 68 miles in length. The Puyallup River begins at glaciers (North Mowich, South Mowich, Edmunds, Puyallup, and Tahoma glaciers) on the west and northwest slopes of Mount Rainier and flows north and west into Puget Sound at Commencement Bay in Tacoma. The Puyallup River watershed comprises 438 square miles. The Puyallup River flows westward for over 54 miles from Mount Rainier to its mouth in Commencement Bay.

The Puyallup River Basin was one of the earliest areas settled in the Puget Sound basin. Historically, the study area was characterized by large tracts of old-growth forests, fertile river valley soils, and abundant runs of salmon.

Urbanization and development have been limited in these areas compared to urban areas in the Puget Sound lowlands. However, both the upper Puyallup and upper White River watersheds have been affected by timber harvest and road building practices that have reduced the ability of riparian areas to provide wood and shade to the river and stream channels. These areas also continue to contribute to fine sediments from road construction and landslides in each river system. These activities continue to adversely impact natural salmonid production.

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2.3 Habitat and Species

Sumner's shorelines provide important habitat for a number of fish and wildlife species. The aquatic environment of both rivers is an important riverine corridor from Mt. Rainer to the Sound. Most notably, the White and Puyallup Rivers have been designated as critical habitat for Chinook salmon and bull trout. Both species are listed as threatened under the Federal Endangered Species Act. In addition, the White and Puyallup Rivers provide habitat for other state priority fish species such as winter steelhead, pink, coho, sockeye and chum salmon, and cutthroat trout. Therefore, fish passage and rearing in smaller streams is an important function of the city's shorelines. Priority fish species have not been identified within the Lake Tapps shoreline planning area.

Modifications to the river system have resulted in reduced levels of ecosystem functioning, including hydrology, water quality, riparian habitat, sediment transport, and in-stream habitat. Changes to hydrology focus on modified flow regime due to dam construction, diversion, and urban development. River management and levees have reduced the connection between the rivers and their floodplains, changing the spatial extent of habitats, and increasing the potential for negative water quality impacts. Wood, in the form of riparian trees and in-channel wood, is generally lacking throughout the system, which negatively impacts riparian and aquatic habitats. In general, the level of modification increases moving

downstream in both river systems, and thus, results in a higher occurrence of riverine disturbances.

Important features of Sumner's shoreline environment that provide habitat include:

- Streams (fish and wildlife corridors and sources of fluvial sediments);
- Riparian zones (vegetated bars and vegetation overhanging the stream reach);
- Wetlands; and
- Aquifer recharge areas.

Aquatic and terrestrial species found in or near Sumner that utilize crucial shoreline habitat include:

- Salmonids (including listed species such as Chinook, steelhead, pink, coho, sockeye and chum salmon, cutthroat trout and bull trout);
- Resident cutthroat;
- Waterfowl and other near shore birds;
- Salamanders, frogs, amphibians; and
- Mammals: raccoons, beavers, deer.

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2.4 Land Use and Public Access

According to Pierce County Assessor records (2008), current land use in Sumner's shoreline planning area is a mix of vacant, industrial/manufacturing, residential, and parks/open space uses. Lands designated vacant are currently the dominant land use, constituting 43 percent of the entire shoreline planning area. While the term "vacant" may not always accurately reflect current conditions (such as protected open space, agriculture, wetlands, or lands with development restrictions), the classification generally indicates that no structural improvements have been made or assessed for taxes on the property.

Table 2. Major Land Uses in Shoreline Planning Area

Land Use	Percent in Shoreline Planning Area
Vacant	43%
Industrial/Manufacturing	16%
Residential	14%
Open Space	11%

Industrial/manufacturing is the second most common land use (16 percent of entire shoreline planning area) focused almost entirely along the White River. Residential land uses are slightly less common (14 percent of entire shoreline planning area) and are mainly concentrated along the Puyallup River as well as segments along the White River. Designated parks and open space lands compose 11 percent of the entire shoreline planning area with the largest acreage in Segment F at the Sumner Meadows Golf Links.

Water-dependent uses within Sumner are limited to boat launches and utilities. The Puyallup Tribe launch boats into the Puyallup River at the Confluence Park as part of their fish-counting research. Water in Lake Tapps is released to the Dieringer Flume via an outfall structure. Even though the Puget Sound Energy Hydropower Project at Lake Tapps ceased operation in January 2004, this outfall structure is likely still considered a water-dependent use. There is an outfall associated with the City's wastewater treatment plant on the White River. There are two other mapped stormwater and sewer outfalls along the rivers in the City. There are no docks, piers, or marinas within Sumner shorelines.

Public access and educational opportunities are provided at approximately 19 locations in the city and its UGA. Existing open space within the shoreline planning area includes both public and private utilities and facilities along with wetlands, undeveloped agricultural lands, vacant land, and the river corridors themselves. Major parks and facilities in the shoreline planning area provide access to a wide variety of activities. Public access to Lake Tapps within the shoreline planning area is not available. Improvements and enhancements to existing park and open space resources are planned in the near future.

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2.5 Shoreline Alterations

Riverine ecological processes in the Puyallup and White Rivers, through the Sumner reach, have been altered by "shoreline modifications" related to the development of flood control infrastructure. Shoreline modifications refer to structural alterations of the shoreline's natural bank, including riprap, bulkheads, docks, piers or other in-water / overwater structures. Such modifications have been used to stabilize the shoreline and prevent erosion. Both the Puyallup and White Rivers are lined through their entire length in Sumner with a system of levees and concrete revetments that were built in the early 1900s. Over time, vegetation has grown and obscured many of the revetments and levees within the Sumner shoreline planning area.

The White and Puyallup Rivers have experienced large scale alterations that have affected the functioning of these river systems. Historical channel change includes the avulsion of the White River channel to the south during a destructive flood in 1906 (Crandell, 1963). Prior to that date, the White River split into two branches on the south side of Auburn. The main branch of the river flowed northward to the Lower Green River. The smaller branch flowed southward as the Stuck River, which joined the Puyallup River. The White River was permanently diverted southward with the construction of diversion levees completed as part of a Corps of Engineers project in 1914. Changes in channel morphology have included the straightening, channelizing, installation of levees and revetments, and construction of bridges and other river crossings. These levees were typically installed more than 50 years ago, and these levees would not meet current engineering standards (King County, 2007).

This alteration initiated a series of projects intended to manage the size, location, and behavior of the Puyallup River and its tributaries (King County, 1988). Between 1908 and 1917, significant relocation, armoring, and diking of the Puyallup River was completed. Much of the work was completed under the auspices of the Inter-County River Improvement District, which was formed as an organization to share costs between King and Pierce Counties to address river issues surrounding the White River's change of alignment into the Puyallup basin (King County, 1988). After the White River was fully diverted to the Puyallup Basin, the Pierce County River Improvement District maintained levees and revetments. That maintenance is now performed by Pierce County Public Works and Utilities.

The hydrology of the White River has also been modified with the installation of the Mud Mountain Dam in 1948. The Mud Mountain Dam was installed at RM 29, primarily for flood control purposes. Mud Mountain is a 'run of the river' dam,

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passing flows up to 15,000 cfs largely unchecked, and retaining higher flows (GeoEngineers, 2003).

The system of channel and flood control structures paralleling the White and Puyallup Rivers have highly modified these systems through the City and surrounding area. Both rivers are channelized and reaches of both have been historically dredged as part of flood control efforts. Gravel removal has been proposed as part of flood control efforts still occurs on reaches of the Puyallup River, including areas within and near the City (work completed by the Pierce County Department of Surface Water Management). Revetments and levees limit connectivity with remaining riparian habitat and wetland areas located within adjacent floodplains, and limit overbank conveyance and dynamic storage of flood flows (Tetra Tech, 2009).

The existing levees and high river flows limit public access to the White and Puyallup Rivers. With the exception of bridges, and various power line crossings, there are no docks, piers, or over water structures located on the Puyallup River, White River, or Lake Tapps in the Sumner shoreline planning area. There are no culverts on the main channels of the White or Puyallup Rivers. However, tributaries with culvert barriers within 200 feet of the mainstream reaches have been identified and constitute a concern for fish passage.

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3.0 RESTORATION PLANNING

3.1 Restoration Framework

This restoration plan seeks to establish a basic framework for improving the quality and sustainability of Sumner's shoreline resources over time. The following SMA concepts should guide identification, evaluation and prioritization of restoration opportunities:

- Restoration or enhancement should support the overarching goal that local shoreline master programs "serve to improve the overall condition of habitat and resources within the shoreline area…"(WAC 173-26-201[2][c]); and
- Restoration should be designed to address areas where shoreline ecological functions have been impaired as a result of past development activities.

A number of local and regional planning efforts have been developed to address water resource management, water quality, and salmon habitat recovery (see Section 3.2). These existing plans and programs provide a framework of goals, policies, and in some cases, funding mechanisms. The goals, policies, and actions identified in this restoration plan should coordinate and be consistent with this broader framework of conservation and restoration work in the region.

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3.2 Existing Plans and Programs

3.2.1 City of Sumner

NPDES Permit Program: The City of Sumner is a Phase II community under the state NPDES permit program. In compliance with permit requirements, for the past several years, the City has had a public education program to involve and educate the public about stormwater issues. For example, the City partners with the Pierce Conservation District Stream Team on volunteer efforts, and distributes educational materials from Puget Sound Starts Here to encourage citizens to prevent water pollution. Plans are underway to begin a rain garden installation program for city residents (City of Sumner, 2011a).

24th Street Interchange Biological Opinions: The City of Sumner and Washington State Department of Transportation (WSDOT) applied for a Corp of Engineer (COE) permit to authorize one acre of wetland fill to allow for development of the 24th Street Interchange, providing direct access from SR 167 to north Sumner. WSDOT submitted a Biological Assessment to the COE. The COE requested Endangered Species Act Section 7 formal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS).

The NMFS Biological Opinion estimated that 1,562 acres of land would be served by the interchange of which approximately 640 acres were within the FEMA designated 100-year floodplain. Around 771 acres of land served by the interchange was considered underdeveloped or vacant with no plans for development (NMFS, 2003).

The Biological Opinions issued by NMFS concluded that the proposed action is not likely to jeopardize the continued existence of Puget Sound (PS) chinook (Oncorhynchus tshawytscha) Evolutionarily Significant Unit (ESU) (NMFS, 2003). The opinion also authorized incidental take for future construction in the White River valley portion (approximately 771 acres) of the action area that might harm listed salmonids. The Biological opinion issued by USFWS concluded that the proposed action is not likely to jeopardize the Coastal/Puget Sound bull trout (USFWS, 2003). The opinions established terms and conditions which applied to the White River within the action area. In 2004, the City of Sumner adopted and updated its Trail Plan, Critical Areas Ordinance and Shoreline Master Program to address and comply with the Biological Opinions' terms and conditions. Restoration opportunities within the White River floodplain are shown within this Restoration Plan.

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3.2.2 Puyallup River Watershed Council

The Puyallup River Watershed Council (PRWC), formed in 1996, includes representatives of local governments, businesses, elected officials, environmental agencies, non-profit groups and private citizens. The PRWC provides stakeholders in the watershed a forum in which to promote and implement projects that protect the environmental, economic, and cultural health of the watershed. PRWC has ten broad goals related to clean water, healthy native fish and wildlife, sustainable land use, viable agriculture and forestry, quality outdoor recreation, natural flow patterns and groundwater recharge, vegetated corridors, management of solid waste, resident education, and sustainable communities. Pierce County Public Works and Utilities provides support to the PRWC. See the following website for more information:
www.piercecountywa.org/pc/services/home/environ/water/ps/prwc/main.htm

The City of Sumner is a member of the Puyallup River Watershed Council. The Council developed a five-year action agenda to focus its efforts from 2007 – 2011. The action agenda identifies the top ten priority actions for the watershed and identifies which actions are appropriate for implementation by each member jurisdiction of the Council. For Sumner, the identified priority actions include:

- Management of Runoff from New Development – Low Impact Development and Erosion and Sediment Control on Construction Sites
- Stormwater Management – Facility Maintenance and Retrofitting
- Streamside and Riparian Planting
- Preserve and Restore Aquatic and Terrestrial Habitat
- Water Quantity Management (Flooding and Water Supply)
- Education, Outreach and Public Involvement
- Monitoring and "State of the Watershed" Assessment (PRWC, 2007).

3.2.3 Pierce County

Several County-led programs and plans address restoration opportunities and projects within the shoreline areas of Pierce County. Each of these programs and plans involves community stakeholders, the Tribes, non-governmental organizations, and other partners. Some of the major Pierce County restoration programs underway include the Pierce County Lead Entity for Salmonid Recovery in WRIA 10/12, the County's Basin Planning efforts through Public Works and Utilities, and an update to the Pierce County Rivers Flood Hazard Management Plan.

Pierce County Lead Entity for Salmonid Recovery in WRIA 10/12

The 1999 Washington Legislature created and authorized the Salmon Recovery Funding Board (SRFB) to guide spending of funds targeted for salmon recovery activities and projects. The legislation also included a ranking process that provides an opportunity for local organizations to prioritize projects from their watersheds before they are submitted to the SRFB. Pierce County serves as the "Lead Entity" for the Puyallup/White and Chambers/Clover watersheds ranking process. Projects from both watersheds are ranked together and only one list is submitted to the SRFB for consideration. Project ranking is performed by a "Citizens' Advisory Committee" (CAC) of stakeholders from both watersheds. A Technical Advisory Group (TAG) supplies the most up to date scientific data to the CAC. The CAC then prioritizes proposed salmon habitat protection and restoration projects. Once

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prioritized, the Lead Entity Coordinator submits the list to the State Salmon Recovery Board for funding decisions. See the following website for more information:
www.co.pierce.wa.us/pc/services/home/environ/water/ps/leadentity.htm

Basin Planning

Basin planning is an important component of shoreline restoration in Pierce County. Pierce County Public Works and Utilities – Surface Water Management has developed basin plans for 10 areas within the County. The plans identify and prioritize projects to improve flood management, water quality, and riparian habitat. The first phase of developing a basin plan is to study the existing characteristics of the basin, such as flooding, water quality, and fisheries. This information is used to develop a prioritized list of projects and actions to reduce flood damage and improve water quality and floodplain habitat in the basin. In 2005, a basin plan for the Mid-Puyallup River was issued. Basin plans for the White River/Lake Tapps and Upper Puyallup/Carbon River basins are currently being developed.

3.2.4 Pierce County Noxious Weed Control Board

Washington State requires the control of noxious weeds through the Revised Code of Washington (RCW) Title 17, and Title 16 of the Washington Administrative Code (WAC). State law requires all landowners (private or agency) to manage weeds on their properties (RCW 17.10.140). To implement these requirements, the State established the Washington State Noxious Weed Control Board (WSNWCB) (Chapter 16-750 WAC). The State Board oversees the statewide management of noxious weeds in an effort to ultimately prevent establishment of invasive vegetation and preserve native species and habitat. The State Board identifies and classifies weeds that are of concern in the state and maintains the state noxious weed list. The State Board has determined that noxious weed control is best implemented at a local level due to the variation in ecosystems across the state. Therefore Chapter 17.10 RCW establishes Noxious Weed Control Boards for counties in the state. Pierce County Code Chapter 8.24 specifically activates the Pierce County Noxious Weed Control Board (PCNWCB). The County Board enforces the state noxious weed control regulations and refines the state noxious weed list to include species present in Pierce County. The County Board provides guidance on methods of control, and has the authority to cite property owners for failing to comply with weed control requirements.

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3.2.5 Flood Hazard Management Plans and Studies

Lower Puyallup River Flood Protection Investigation

Pierce County completed the Lower Puyallup River Flood Protection Investigation in June 2009 to identify flood reduction strategies along the lower Puyallup River. The investigation was completed with regional (multi-jurisdictional) input and to meet US Army Corps of Engineers standards to allow for Federal assistance with lower Puyallup River flood control efforts (Tetra Tech, 2009). The investigation was completed under the context of updated flood maps, which extended the jurisdictional floodplain landward of many lower Puyallup levees[1]. The investigation examined existing conditions, riverine and floodplain dynamics, and potential economic implications of various flood protection alternatives for the lower Puyallup River system. The investigation presents technical information that should be considered, along with other plans, in planning and design of flood hazard management projects along the lower Puyallup system, including integrated restoration objectives. See the following website for more information: www.co.pierce.wa.us/pc/services/home/environ/water/cip/lpuyrivleveeinvest.htm

Efforts to implement strategies identified within the Investigation, as well as within other planning efforts, are ongoing. Multi-jurisdictional coordination occurs through the Puyallup River Executive Task Force. More information is available through the Task Force webpage:
www.co.pierce.wa.us/pc/services/home/environ/water/cip/pretf.htm

United States Geological Survey (USGS) Study

The USGS performed a detailed analysis of sediment transport and flood elevations in the lower reaches of the White and Puyallup Rivers (Czuba et al., 2010). This study supplemented data and analysis performed in the 1980s and evaluated the effectiveness of different river-management options including levee setbacks, gravel-bar scalping and a combination of techniques at three sites to determine which restoration technique is best suited to address flooding and aggregation. This

[1] Updated flood maps were prepared to only consider levees when certified by the US Army Corps of Engineers as meeting specific criteria for flood protection; all levees (including many along the lower Puyallup) that did not meet this criteria were not considered in preparation of updated maps. FEMA is now reconsidering policies for consideration of uncertified levees, which may result in future changes to the jurisdictional floodplain within the Puyallup and White River systems.

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study concluded that both the setback levee and gravel-bar scalping could reduce high-flow water-surface elevations; however, setback levees resulted in greater local reductions in water surface elevations. River reaches with setback levees can store more water during flood events and attenuate flood peaks (Archer, 1989; Woltemade and Potter, 1994; Anderson, 2006). Even though the model results show only local reductions in water-surface elevations due to setback levees, flood-peak attenuation could reduce water-surface elevations downstream.

Pierce County Flood Hazard Management Plan

The Pierce County Rivers Flood Hazard Management Plan, under development, will replace and geographically extend the 1991 Puyallup River Basin Comprehensive Flood Control Management Plan. The actions recommended in the final plan will focus on reaches of the main stems of all major rivers within the County, including the Puyallup and White Rivers through Sumner. Recent flood events and increasing development pressure in areas within and surrounding Sumner has focused attention on flood management in Pierce County, making the timing for development of this plan ideal. The draft plan is expected to be completed in fall 2011. See the following website for more information: www.co.pierce.wa.us/pc/services/home/environ/water/wqws/floodhazmgmtplanMain.htm

King County Flood Hazard Management Plan

The King County Flood Hazard Management Plan was adopted in 2007, and provides goals, policies, management and implementation strategies, and basin-specific action plans to guide overall flood hazard management across the County. Action plans focused on floodplain and flood hazard management for the White River are relevant to Sumner. In addition, the polices included in the plan provide a framework for inter-governmental cooperation, multi-objective management, and protection of natural floodplain functions and values. The plan is available at: www.kingcounty.gov/environment/waterandland/flooding/documents/flood-hazard-management-plan.aspx

3.2.6 Dieringer Flume and Lake Tapps Studies

The Dieringer Flume is the outlet or tailrace from the former hydroelectric project on Lake Tapps. The flume discharges to the White River in Segment F of Sumner's shoreline planning area. Under a White River management agreement between the Cascade Water Alliance and Native American tribes, a tailrace study is being

developed to identify water quality and fishery issues and determine what improvements are needed at the tailrace. The purpose is to improve water quality discharged from Lake Tapps and prevent the entry, stranding, or delayed migration of salmonids in the tailrace. The parties of the agreement will work with local agencies to develop a management plan to protect the water quality of Lake Tapps by addressing stormwater discharges and septic system filtration into the lake. A water quality monitoring plan will also be developed. See the following website for more information: http://cascadewater.org/lake_tapps_agreements.php.

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4.0 RESTORATION PRIORITIES AND OPPORTUNITIES

4.1 Restoration Priorities

The top restoration priorities for Sumner include:

- Protection of remaining mature forest and intact riparian vegetation along the shoreline.
- Partnerships with Pierce County Public Works and Utilities and other regional agencies to accomplish flood management and ecosystem restoration including projects that set back levees and replace hard shoreline armoring with "soft" alternatives.
- Management of invasive plant species in riparian zones and revegetation with native trees and shrubs.
- Education and assistance to landowners to help them restore degraded shoreline areas and protect high-quality shoreline habitats.
- Continued participation in the Puyallup River Watershed Council and its restoration efforts.

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4.2 Restoration Opportunities

4.2.1 Programmatic Restoration Opportunities

Certain restoration actions should be broadly and comprehensively implemented on a programmatic basis to help achieve restoration goals. The following programmatic actions are recommended for shorelines within Sumner. Opportunities to partner with other jurisdictions and organizations on programmatic efforts should also be explored.

Education and Incentives:

a) Educate property owners about proper vegetation/landscape maintenance (including preservation of native vegetation along riparian corridors) to promote shore stabilization and protect water quality.

b) Encourage low impact development practices for shoreline property owners.

c) Educate private property owners about the negative impacts of shore armoring and encourage soft shore protection where shore protection is unavoidable.

d) Encourage incentive programs for shoreline property owners, such as transfer or purchase of development rights and tax incentives for shoreline restoration and protection.

e) Where shorelines have been modified, provide incentives to encourage redevelopment activities to include salmonid habitat restoration.

River Shorelines:

a) Encourage levee setback projects to allow for channel migration on rivers and provide off-channel habitat for salmonids.

b) Remove culverts and blockages from smaller tributaries and replace with bridges to allow for fish passage and channel migration.

c) Restrict new development in the floodplain and channel migration zone.

Infrastructure:

a) Implement best management practices to control runoff from agricultural lands.

b) Retrofit stormwater systems using Low Impact Development (LID) strategies.

c) Incorporate native tree and shrubs plantings as part of planned trail expansions.

Planning and Coordination:

a) Match mitigation, including off-site and compensatory mitigation, to appropriate restoration and enhancement activities as identified in salmon recovery, watershed management plans and the SMP restoration plan.

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b) Coordinate SMP restoration with salmonid recovery and watershed management plans to align with projects prioritized in salmon recovery plans.

c) Survey invasive vegetation in the shoreline and establish a control program in coordination with the Pierce County Noxious Weed Control Board.

d) Coordinate restoration efforts with the Puyallup River Watershed Council, Pierce Conservation District, and Pierce County Surface Water Management.

Flood Hazard Management Planning:

a) Assess feasibility of existing revetment / levee removal and levee setback alternatives for restoration projects within the Puyallup and White River shoreline areas.

b) Integrate restoration with flood hazard management efforts to reestablish and protect natural floodplain functions.

c) Consider downstream and upstream implications for flood stage and sediment dynamics resulting from restoration projects.

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4.2.2 Site-specific Restoration Opportunities

Table 3 below summarizes protection and restoration opportunities, primarily as described in the Shoreline Inventory and Characterization Report (ESA Adolfson, 2010). Additional restoration actions are identified by the Pierce and King Counties as part of flood hazard and WRIA 10 planning efforts. In general, WRIA 10 planning efforts have concluded that the most beneficial restoration activities for the White and Puyallup Rivers would include levee setbacks, floodplain reconnection, redistribution of large woody debris salvaged from Mud Mountain Dam Reservoir, and modifications to flows at Mud Mountain Dam. King County, Pierce County and WRIA 10 have identified several projects both within and in the immediate vicinity of Sumner; these projects are also identified in Table 3. All site-specific restoration opportunities are identified on Restoration Plan Maps 1 through 10 (Appendix A).

The opportunities described here are considered to be site-specific but may cover many parcels. For example, an opportunity may be appropriate at several locations, but may be implemented on individual parcels over time. Additionally, specific opportunity areas may apply to more than one location along the shoreline. Table 3 also provides an assessment of the scale and potential length of time required to implement restoration opportunities. For each identified opportunity, the table

identifies whether the project is of a short term, medium term, or long term nature. As detailed restoration assessment and prioritization occurs consistent with this plan, the initial assessment of timelines should be re-focused to create detailed schedules and benchmarks for those actions and areas with the greatest restoration potential.

Short term (ST) (approximately 1-3 years) restoration projects include those that could be implemented by local landowners and volunteers and that would benefit the areas that are most in need. Short term restoration efforts include habitat restoration and enhancement efforts in publically owned areas of the City's shorelines. These projects could be implemented in the near term, depending on grant cycles and coordination with volunteer and community organizations.

Medium term (MT) (approximately 3-5 years) restoration projects could include those that enhance Sumner shorelines that have been designated or acquired previously. These could also be implemented where there are public access lands that are not likely to be developed in the near future.

Long term (LT) (approximately 5-10 years) restoration projects could be those that require coordination with other jurisdictions or that cover larger land areas. These projects may be more difficult to implement and would likely require more planning and permitting.

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Table 3. Restoration Opportunities

Planning Segment	Restoration Opportunity	Ecological Functions / Processes Addressed	Preliminary Ranking	Timeline	Restoration Opportunity - Information Source
Segment A – Eastern City Limits to Traffic Avenue Bridge	Two levee setback projects are identified in Segment A: Sumner Setback and Riverside Drive (GeoEngineers, 2008). The **Sumner Setback** site is located along the left (south) bank of the Puyallup, primarily within unincorporated Pierce County. The **Riverside Drive** site, located at and upstream of RM 10.7, would reconnect the Puyallup River with approximately 47 acres of historic, disconnected floodplain. Restoration would improve the functions in this segment by increasing active channel width, off-channel habitat and subsequently enhance habitat-forming processes. Enhance riparian vegetation by removing non-native plant species (e.g. Himalayan blackberry), and installing native plantings. Vegetation enhancement opportunities located at the eastern and western ends of the segment. Protect mature forest at western end of segment. Several small tributaries join the Puyallup in this segment. There may be opportunities to enhance riparian vegetation and in-stream habitat at these stream confluences.	Floodplain connectivity Off-channel salmonid habitat Stream shading Organic inputs Wildlife habitat	Medium	Levee setback (Sumner Setback) – LT Vegetation enhancement – ST to MT Stream confluences – ST to MT	Vegetation enhancement opportunities identified from Inventory and Characterization Report (ESA Adolfson, 2010); Levee setback opportunities identified in Levee Setback Feasibility Analysis – Puyallup River Watershed (GeoEngineers, 2008).

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Planning Segment	Restoration Opportunity	Ecological Functions / Processes Addressed	Preliminary Ranking	Timeline	Restoration Opportunity - Information Source
Segment B – Confluence of White and Puyallup Rivers	Protect and enhance riparian vegetation in north part of segment. Revegetate part of the informal fishing area on City property adjacent to the City's Wastewater Treatment Facility, at the confluence of the White and Puyallup Rivers. Restrict public fishing access to a smaller area through use of fencing and signs. Flood protection improvement alternatives to minimize flooding potential at the Wastewater Treatment Facility are being assessed by the City and Pierce County as part of its Flood Hazard Management Planning effort. This project is in preliminary design and engineering phases. The river banks within this segment are armored with riprap and concrete. These materials could be replaced with bank stabilization materials that would enhance fish and wildlife habitat, such as large woody debris and native plantings. Levee setback projects are identified on both banks of the Puyallup River starting at and extending downstream of the confluence (RM 9.5 to RM 10.2): Golf Course Oxbow Setback (left – south – bank) and White & Puyallup Rivers Confluence (right – north – bank) (GeoEngineers, 2008). The **Golf Course Oxbow Setback** site proposes to remove approximately 4,456 linear feet of existing levee located along the left (south) bank of the Puyallup River and construct a setback levee reconnecting approximately 42.2 acres of riparian and floodplain area. The **White & Puyallup Rivers Confluence** site proposes to remove approximately 4,423 linear feet of existing levee located along the right (north) bank and construct a set-back levee and reconnect approximately 30.2 acres of riparian and floodplain area. Both projects would reconnect the Puyallup River with remnant riparian wetlands, improve flood storage, reestablish natural sediment conveyance and storage processes, and enhance instream and riparian habitat.	Stream shading Organic inputs Wildlife habitat Minimizing contamination potential Floodplain connectivity	High	Vegetation enhancement – ST to MT Flood protection for Wastewater Treatment Facility – LT Bank stabilization replacement – MT to LT Levee setback (both identified projects) – LT	Vegetation and shoreline enhancement and bank stabilization opportunities identified from Inventory and Characterization Report (ESA Adolfson, 2010); Flood protection improvement alternatives identified from Flood Hazard Management Planning (Pierce County, 2011); Levee setback opportunities identified in Levee Setback Feasibility Analysis – Puyallup River Watershed (GeoEngineers, 2008).

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Planning Segment	Restoration Opportunity	Ecological Functions / Processes Addressed	Preliminary Ranking	Timeline	Restoration Opportunity - Information Source
Segment C – SR410 Bridge to Union Pacific Spur Bridge	The river banks within this segment are armored with riprap and concrete. These materials could be replaced with bank stabilization materials that would enhance fish and wildlife habitat, such as large woody debris and native plantings. Protect and enhance riparian vegetation throughout undeveloped portions of segment by removing non-native plant species (e.g. Himalayan blackberry), and installing native plantings.	Off-channel salmonid habitat Stream shading Organic inputs Wildlife habitat	Medium	Bank stabilization replacement – MT to LT Vegetation enhancement – ST to MT	Vegetation and shoreline enhancement and bank stabilization opportunities identified from Inventory and Characterization Report (ESA Adolfson, 2010).
Segment D – Union Pacific Spur Bridge to Tacoma Road Bridge	Bank stabilization replacement – similar to Segment C Restore existing riparian vegetation throughout undeveloped portions of this segment. Control non-native invasive vegetation as needed. Sotain Creek joins the White River in this segment. There may be opportunities to restore riparian vegetation and in-stream habitat at the confluence.	Stream shading Organic inputs Wildlife habitat	Medium	Bank stabilization replacement – MT to LT Vegetation enhancement – ST to MT Stream confluence – ST to MT	Vegetation and shoreline enhancement and bank stabilization opportunities identified from Inventory and Characterization Report (ESA Adolfson, 2010).
Segment E – Tacoma Road Bridge to Public Land	The river banks within this segment are armored with riprap and concrete. These materials could be replaced with bank stabilization materials that would enhance fish and wildlife habitat, such as large woody debris and native plantings. In some portions of this segment, it may be feasible to restore channel and bank conditions by removing existing revetments and cutting back fill in the riparian area. This would increase the active channel width and subsequently enhance habitat-forming processes. Restore and enhance riparian vegetation along both banks of the White River by removing non-native plant species (e.g. Himalayan blackberry), and installing native plantings. Enhance riparian vegetation along the lower portion of Salmon Creek. Salmon Creek joins the White River in this segment. There may be opportunities to restore riparian vegetation and in-stream habitat at the confluence.	Off-channel salmonid habitat Increased active channel width Stream shading Organic inputs Wildlife habitat	Medium	Bank stabilization replacement – MT to LT Vegetation enhancement – ST to MT Stream confluence – ST to MT	Vegetation and shoreline enhancement opportunities identified from Inventory and Characterization Report (ESA Adolfson, 2010).

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Planning Segment	Restoration Opportunity	Ecological Functions / Processes Addressed	Preliminary Ranking	Timeline	Restoration Opportunity - Information Source
Segment F – Public Land to 8th Street Creek	Bank stabilization replacement – similar to Segment C Three levee setback projects are identified within this segment: Interurban-White Site, 24th Street E Pointbar, and 8th Street E Setback (GeoEngineers, 2008). For all project opportunities, existing levees that constrain the channel would be removed, with new levees constructed farther away from the main channel. The **Interurban-White** site is located south of 32nd Street East and east of 142nd Avenue East. The project would remove approx. 150 feet of existing levee and construct a setback levee reconnecting approximately 3.5 acres of riparian and floodplain area. The **24th Street E Pointbar** site is located on the left (east) bank south of the Sumner Meadows Golf Course and west of the East Valley Highway. The project would remove approximately 1,500 linear feet of existing levee and construct a setback levee reconnecting approximately 9.2 acres of riparian and floodplain area. The project, currently in planning and initial design stages by the City, would improve connectivity of the White River to off channel habitats. The **8th Street E Setback** site is also located on the left (east and north) banks of the mainstem upstream of the 24th Street project site. The project would remove approximately 4,709 linear feet of existing levee and construct a setback levee reconnecting approximately 29.4 acres of riparian and floodplain area. The project would allow for and promote channel migration and would moderately promote the creation of complex channel structure. Existing narrow riparian vegetation corridors on City owned golf course and agricultural property could be expanded with large-scale native tree and shrub plantings near the river. Continued agricultural use could be accommodated by incorporating riparian buffer strips on portions of the property. The Dieringer Flume could be restored to a meandering stream channel near the river confluence;	Floodplain connectivity Off-channel salmonid habitat Stream shading Organic inputs Wildlife habitat	High	Bank stabilization replacement – MT to LT Levee setback – LT Vegetation enhancement – ST to MT Stream confluence – ST to MT Biological opinion conditions – ST	Vegetation and shoreline enhancement opportunities identified from Inventory and Characterization Report (ESA Adolfson, 2010); Levee setback opportunities identified in Levee Setback Feasibility Analysis – Puyallup River Watershed (GeoEngineers, 2008). Habitat preservation – Sumner Trail Master Plan (City of Sumner Community Development Department, 2008); 24th Street Interchange Biological Opinion conditions and recommendations (NMFS, 2003; USFWS, 2003).

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Planning Segment	Restoration Opportunity	Ecological Functions / Processes Addressed	Preliminary Ranking	Timeline	Restoration Opportunity - Information Source
Segment F – Public Land to 8th Street Creek	flows from the flume could be diverted to create or enhance off-channel habitats. The Sumner Trail Master Plan recommends that the wooded area near 24th be preserved and made more accessible with footpaths. Since most of the area is wetland and one of the last areas of riparian woodland, according to the Plan, it should be preserved as habitat. Protect and enhance riparian vegetation throughout this segment, particularly in Riverbend Park. Control non-native plant species (e.g. Himalayan blackberry). Establish a best management practices plan for the golf course. Plan could include plantings to expand the native vegetation along the river, and measures to reduce use of chemicals. 8th Street Creek flows through the golf course and joins the White River in this segment. There may be opportunities to restore riparian vegetation and in-stream habitat at the confluence. The 24th Street Interchange Biological Opinion, described above in Section 5.3.4, included the following two conditions that pertain to the White River: 1) The City of Sumner must permanently prohibit impervious development on 30 acres of City-owned property east of the White River. 2) The City of Sumner must permanently restrict new development on 88 acres of City-owned property east of the White River to a maximum impervious coverage of 40 percent. In addition, in the Biological Opinion USFWS recommended that nonfunctioning levees above the Dieringer Powerhouse outfall (RM 3.6) on the White River be removed or setback, in order to restore floodplain and riparian connectivity and create off channel habitat.				

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Planning Segment	Restoration Opportunity	Ecological Functions / Processes Addressed	Preliminary Ranking	Timeline	Restoration Opportunity - Information Source
Segment G – 8th Street Creek to Stewart Road Bridge	Bank stabilization replacement – similar to Segment C Two levee setback projects are identified: continuation of the **8th Street E Setback** site (described in Segment F) on the left (north) bank and the **Pacific Pointbar** site on the right (south) bank (GeoEngineers, 2008). The Pacific Pointbar proposed project would remove approximately 2,516 linear feet of existing levees and construct a setback levee reconnecting approximately 169 acres of riparian and floodplain area.	Floodplain connectivity Off-channel salmonid habitat Stream shading Organic inputs	Medium	Bank stabilization replacement – MT to LT Levee setback – LT	Bank stabilization replacement identified from Inventory and Characterization Report (ESA Adolfson, 2010); Levee setback opportunities identified in Levee Setback Feasibility Analysis – Puyallup River Watershed (GeoEngineers, 2008).
Segment H – Stewart Road Bridge to City Limits	The majority of land within this segment is upland and wetland habitat, with moderate diversity. Protection of the land within this segment could help maintain quality habitat for sensitive species. The **Countyline Levee Setback Project** is identified on the left (east) bank of the White River partially within Segment H. The project crosses north into King County, extending upstream of City limits, and has been identified by floodplain restoration planning efforts for both Pierce and King Counties. The project would remove approximately 5,822 linear feet of existing levee / revetment and construct a setback levee that would reconnect approximately 84.6 acres of floodplain, riparian area springs, side-channels and wetlands located at the site. The project is in design and engineering phases, with construction anticipated between 2012 and 2013.	Wildlife habitat Stream shading Organic inputs Floodplain Connectivity	High	Land acquisition – LT Levee setback – ST	Habitat protection opportunities identified from Inventory and Characterization Report (ESA Adolfson, 2010); Levee setback opportunities identified in: Levee Setback Feasibility Analysis – Puyallup River Watershed (GeoEngineers, 2008) and King County's Lower White River Countyline to A Street project webpage (King County, 2011).

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Planning Segment	Restoration Opportunity	Ecological Functions / Processes Addressed	Preliminary Ranking	Timeline	Restoration Opportunity - Information Source
Upstream of City	Three levee setback projects are identified on both shorelines of the White River immediately upstream of the City: continuation of the Countyline Project (left bank) and two projects located within City of Pacific parks, both on the right (west) bank. See Segment H discussion above for details on the Countyline Project (GeoEngineers, 2008). At both the **Pacific Park Project** site (within Pierce County) and the **Pacific City Park / Lower White River Right Bank Levee Setback Project** site (within King County), the White River is confined by concrete revetments and has no functional riparian buffer. These areas are currently used as parks by the City of Pacific; however, they are contained largely within the 100-year floodplain and contain several historically active channels. The proposed projects would repair and or replace portions of damaged revetment. The project will also install logs and rocks along the toe of the slope and re-stabilize the bank face using bioengineering techniques. Levees would be setback to restore floodplain connectivity. The King County site is under preliminary alternatives analysis and planning, with construction anticipated in 2015-2016.	Wildlife habitat Stream shading Organic inputs Floodplain Connectivity	High	Levee setback – ST / MT	Levee setback opportunities identified in: Levee Setback Feasibility Analysis – Puyallup River Watershed (GeoEngineers, 2008); King County's Lower White River Right Bank project webpage (King County, 2011).
Segment UGA-1 – Lake Tapps	The shoreline of Lake Tapps within this segment generally consists of mature, mixed forest and scrub-shrub wetland. There is relatively little shoreline development within this segment. Protection of the land within this segment could help maintain quality habitat for sensitive species and the overall biodiversity of the area.	Wildlife habitat Stream shading Organic inputs	High	Habitat protection – ST	Habitat protection identified from Inventory and Characterization Report (ESA Adolfson, 2010).

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Planning Segment	Restoration Opportunity	Ecological Functions / Processes Addressed	Preliminary Ranking	Timeline	Restoration Opportunity - Information Source
Segment UGA-2 – Riverside Park to City Limits	Two levee setback projects are identified in Segment UGA-2: Riverside Drive and Riverside Park (GeoEngineers, 2008). The **Riverside Park** site is also located on the right (east) bank at RM 12.8; the site extends through Riverside Park, a historic floodplain area that is now disconnected from the mainstem. Levee setback opportunity would reconnect approximately 47 acres of floodplain, including restored connection to an unnamed tributary with remnant side channel habitat. Enhance riparian vegetation by removing non-native plant species (e.g. Himalayan blackberry), and installing native plantings. Vegetation enhancement opportunities located at Riverside Park. Riparian vegetation in the western part of the segment could also be protected and enhanced.	Floodplain connectivity Off-channel salmonid habitat Stream shading Organic inputs Wildlife habitat	Medium	Levee setback (Riverside Drive / Riverside Park) – LT Vegetation enhancement – ST to MT	Vegetation enhancement opportunities identified from Inventory and Characterization Report (ESA Adolfson, 2010); Levee setback opportunities identified in Levee Setback Feasibility Analysis – Puyallup River Watershed (GeoEngineers, 2008).

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4.3 Existing Capital Improvement Projects

In addition to the opportunities described above, the City is already initiating and planning several capital improvement projects near the shoreline. These projects may provide opportunities for restoration coupled with the design and implementation of the primary capital improvement. Table 4 summarizes information from the City's current Transportation Plan (City of Sumner, 2011b) and Improvement Plan for Parks and Open Space (City of Sumner, 2003). Some of the projects shown below are also included in the Sumner Trail Master Plan (City of Sumner Community Development Department, 2008).

Table 4. Existing Capital Improvement Projects

Shoreline Segment	Project Name	Description	Funding Obtained?	Cost	Document Source	Rank
B-C	Wastewater Treatment Plant to Bridge Street Trail	State St. to Main St. Connects to trail at WWTP.	Yes	$654,000	Six Year Transportation Plan 2012-2017	Trails 6
B	Traffic Avenue	Thompson ST/WB SR 410 Ramps to the Puyallup River Bridge. Widen roadway and existing WSDOT overpass to 5-lanes. Restripe lanes and revise signal timing.	No	$11,000,000	Six Year Transportation Plan 2012-2017	Arterial 9
C-D	Bridge Street to Fryar Avenue Trail	Main St. to Puyallup St. Completes trail through town.	No	$600,000	Six Year Transportation Plan 2012-2017 Sumner Trail Master Plan	Trails 8

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Shoreline Segment	Project Name	Description	Funding Obtained?	Cost	Document Source	Rank
E (Salmon Creek confluence with White River)	Salmon Creek Open Space Purchase	Portions of the riparian corridor along Salmon Creek would be purchased to create contiguous open space along the stream. The funds would be used to link areas already set aside for conservation as required mitigation for development impacts.	–	$320,000	2003-2009 Improvement Plan for Parks and Open Space	–
F	24th St. Bridge and corridor to E. Valley	Determine alignment, preliminary costs and rerun traffic model to determine when this may be needed.	No	$250,000	Six Year Transportation Plan 2012-2017	Arterial 8
F	24th Street Trail connection	Extend from the existing 24th Street Bridge (pedestrian bridge) Trail, across the #9 Ditch to the south end of the City of Sumner's property.	No	$425,000	Six Year Transportation Plan 2012-2017	Trails 7
G	River Bend Park segment (White River Trail)	Extend trail north from 16th St. across river and along golf course to trail segment along new stream.	Yes	$2,200,000	Six Year Transportation Plan 2012-2017 Sumner Trail Master Plan	Trails 5
Break between G & H	Stewart Road (8th Street) White River Bridge	This bridge would replace the existing 2-lane bridge. It will be two unequal length spans. The width will be 74 feet to accommodate 4 lanes, a sidewalk on one side and a trail crossing on the other.	No	$9,500,000	Six Year Transportation Plan 2012-2017	Arterial 3

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There are no Pierce County capital improvement projects in Sumner's urban growth area or proposed urban growth area (Pierce County Department of Public Works and Utilities, 2009 and 2010). Although Pierce County CIP projects have not been identified in Sumner and its UGA, several restoration opportunities projects are in the planning or design stages and have been included in Table 3 Restoration Opportunities.

5.0 POLICY DEVELOPMENT

5.1 Existing City of Sumner Goals, Policies and Objectives

Goals, policies and objectives that relate to protection and restoration of shoreline resources are established in the Sumner Comprehensive Plan (December 2010, or as amended hereafter) under the Shoreline Master Program Element, Environmental Element and Parks and Open Space Element. Goal statements address the preservation and protection of the shoreline environment; protection of surface water quality; protection of unique, valuable and critical plant and wildlife habitat; and preservation of significant open space.

5.2 Proposed SMP Restoration Goals and Policies

Shoreline Master Program goals, policies and objectives should be consistent with and integrated into the Sumner Comprehensive Plan. As the City works through the SMP update process, the following potential goals and objectives related to shoreline restoration could be added to the Comprehensive Plan under the Shoreline Master Program Element. The goals are generally focused around four key areas: 1) coordinating with regional plans and programs, 2) opportunities focused on public property along the shorelines, 3) voluntary or incentive based and public education opportunities and 4) flood hazard management. Goals and objectives that relate to flood hazard management are generally consistent with the King County River and Floodplain Management Plan (King County, 2007). The content is organized to be consistent with the structure and organization of the Sumner Comprehensive Plan elements. Some of the objective statements below are already included in the Draft SMP (March 2011).

Goal: *To encourage cooperative restoration actions involving local, state, and federal public agencies, tribes, non-government organizations, and private landowners.*

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Objective: Identify specific restoration opportunities where the City can take the lead with support from other regional entities.

Objective: Encourage establishment of wetland mitigation banks on appropriate sites that conform to state and federal guidelines.

Objective: Consideration should be made for potential adverse effects of global climate change when designing restoration and remediation projects.

Goal: *To integrate restoration efforts with capital improvement projects.*

Objective: Incorporate habitat enhancement elements into the design and implementation of public infrastructure improvement projects

Objective: Prioritize enhancement and restoration efforts at public parks and publically-owned open space lands.

Goal: *To encourage voluntary restoration as part of development proposals.*

Objective: Employ incentives and encourage actions in shorelines and critical areas that restore the ecological functions and ecosystem-wide processes of the City's shorelines.

Objective: Encourage removal of invasive vegetation and planting of native vegetation on private property.

Objective: Encourage replacement of levees and revetments with alternative shoreline stabilization materials whenever feasible.

Objective: Use this restoration framework to integrate compensatory mitigation projects into the broader restoration vision for the city.

Goal: *To educate the Sumner community on restoring shoreline habitat.*

Objective: Educate the community and encourage public involvement in the restoration of the shoreline by creating and leveraging programs, such as the NPDES Phase II stormwater requirements.

Objective: Develop a community education and incentive program to identify and develop restoration opportunities on private property which support the overall goals of shoreline management.

Objective: Establish public education materials to provide shoreline landowners technical assistance about the benefits of native vegetation plantings.

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Objective: Identify areas where kiosks and interpretive signs can enhance the educational experience of users to the shoreline.

Goal: *To encourage inter-governmental coordination and cooperation with neighboring counties and cities in order to implement consistent flood hazard management objectives for the White and Puyallup Rivers.*

Objective: Continue participation in Pierce County flood hazard management planning and implementation efforts, including implementation of identified levee setback opportunities.

Objective: Continue participation in the Puyallup River Executive Task Force.

Objective: Continue to work with Pierce County to provide flood protection for critical City facilities, including the Wastewater Treatment Facility, in order to minimize potential harmful ecological impacts that could occur during flood events.

Objective: Partner with King County and neighboring cities in planning and implementation of flood hazard reduction and floodplain restoration projects to provide additional flood storage capacity within and upstream of the City and enhance natural floodplain functions.

Objective: Establish clear lines of communication with the Corps of Engineers regarding operations of Mud Mountain Dam.

Goal: *To manage the Puyallup and White Rivers, tributaries, and their associated floodplains for multiple, and sometimes competing, uses and objectives. Flood hazard management actions should support long-term flood risk reduction outcomes.*

Objective: Identify and prioritize projects that meet flood hazard reduction and ecosystem restoration objectives.

Objective: Develop public education materials that highlight the importance of the multi-objective approach to flood hazard reduction; use recent and current projects as examples to illustrate how multi-objective approaches work in practice.

Goal: *To protect flood storage, conveyance, and ecological values of floodplains, wetlands, and riparian corridors and, when feasible, to enhance or restore these ecological functions and values. Flood risk reduction strategies and projects should be coordinated on a river-reach scale with the salmon habitat recovery plans.*

Objective: Encourage replacement of levees and revetments with alternative shoreline stabilization materials where feasible.

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Objective: Restore, enhance, and protect native riparian forest communities along the White and Puyallup Rivers.

Goal: *To adopt and implement policies and regulations that meet or exceed Federal and State standards.*

Objective: Adopt and implement policies and regulations contained in Floodplain Management: Higher Regulatory Standards, prepared by the Federal Emergency Management Agency, Region 10 as well as Region 10 guidance for NFIP Compliance with the Endangered Species Act (developed after the release of the 2008 Biological Opinion for the NFIP within the Puget Sound region).

Objective: Seek higher levels of Community Rating System credit for implementation of higher regulatory standards for floodplain management.

Objective: Integrate floodplain management, shoreline management, and critical areas protections into a consistent and comprehensive program that is predictable for development projects and achieves consistency with the standards of the 2008 Biological Opinion for the NFIP and subsequent FEMA Region 10 compliance guidance.

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6.0 IMPLEMENTATION

6.1 Funding and Partnership Opportunities

Funding opportunities for restoration projects include both federal and state grants and legislative funds administered by state agencies. For potential projects in the City of Sumner, the greatest likelihood of obtaining funding would result from continued participation in the WRIA 10 forum and strategic partnering with Pierce County, tribes, and state and federal agencies. Targeting funding requests to address levee setback projects would fit well into the scientific and restoration plans/goals of the organizations listed below. There are also opportunities to partner with non-profit organizations that can help to secure grant funding and recruit volunteers. A few of these programs and organizations most relevant to the City of Sumner are described below.

6.1.1 State and Regional Programs

Salmon Recovery Funding Board (SRFB)

With the listing of salmonid species under the Endangered Species Act in 1999, the Legislature created the Salmon Recovery Funding Board. Composed of citizens appointed by the Governor and five state agency directors, the Board provides grant funds to protect or restore salmon habitat and assist related activities. The SRFB works closely with local watershed groups and has helped finance over 900 projects.

6.1.2 Pierce Conservation District

The Pierce Conservation District (PCD) is a non-regulatory branch of state government that works with Pierce County landowners to protect water quality, improve fish and wildlife habitat, and conserve natural resources while maintaining a sustainable agricultural community (www.piercecountycd.org/).

The PCD works with interested landowners to develop conservation plans that identify current conditions and economically viable alternatives and best management practices (BMPs) to improve productivity while protecting soil and

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water quality. Some of the BMPs incorporated into conservation plans include composting, roof runoff management, pasture planting, and filter strips. In addition, the PCD collaborates with the U.S. Fish and Wildlife Service (USFWS), Washington State Department of Fish and Wildlife (WDFW), WSU Cooperative Extension, Washington State Department of Ecology (Ecology), Department of Natural Resources, and Pierce County government to provide technical assistance for landowners in the County. Major projects include animal waste management, stream bank fencing, replanting stream bank areas, pasture management, improving fish and wildlife habitat, and installation of fish ladders and road culverts.

The PCD's StreamTeam program specifically educates residents about water quality monitoring and stream restoration plantings in the area. Storm drain stenciling kits are available for check-out. See the following website for more information: www.piercecountycd.org/streamteam.html

6.1.3 Native American Tribes

Muckleshoot Tribe

The Muckleshoot Indian tribe is a descendant of the Coastal Salish tribes that have inhabited the region surrounding the White and Green Rivers. The Tribe adopted its constitution in 1936 through the Indian Reorganization Act and is a federally recognized self-governing tribal government. In the 1960s and 70s, the Tribe was involved in a struggle over tribal rights to fish salmon at all of the "usual and accustomed" fishing sites. Following the Bolt Decision, which reaffirmed the Tribe's treaty fishing rights, the tribe's Natural Resources Department has focused primarily on salmon preservation and restoration of salmon habitat. See the following website for more information: www.muckleshoot.nsn.us

Puyallup Tribe

The Puyallup Tribe was one of several tribes that signed the Treaty of Medicine Creek in 1854 with Territorial Governor Isaac Stevens. This treaty established the boundaries of the Puyallup Reservation and spelled out specific rights for tribal members such as access to traditional hunting and fishing grounds. In 1990, the Tribe formally accepted a settlement of $162 million in cash, real estate and economic development programs in exchange for giving up claims to about 18,000 acres along Commencement Bay. This resolved disputes over property titles and allowed the Port of Tacoma to develop land for shipping terminals and other industrial uses. Tribal departments such as the Environmental and Natural Resources, Fisheries and Shellfish are committed to improving water quality and

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habitat for fish and wildlife. The Tribe operates hatcheries and monitors fish runs and an elk herd, and works closely with local governments on a host of environmental issues. See the following website for more information: www.puyallup-tribe.com

6.1.4 Pierce County Programs

Conservation Futures Program

Conservation Futures is a Pierce County land preservation program intended to protect open space, timber lands, wetlands, critical habitats, and farm lands within the county. This program is funded through a State authorized county property tax. Taxes collected, identified as Conservation Futures, are used to acquire land, or the rights to future development of lands, for conservation purposes. Lands identified in the Sumner SMP as future restoration or conservation sites can be nominated by the City, or an agency, for purchase through this County-sponsored program.

Open Space-Public Benefit Rating System-Tax Program

Pierce County's Public Benefit Rating System (PBRS) provides for a reduction in property taxes for lands containing various open space features, such as streams, wetlands, estuaries, wooded areas, etc. These features are scored and the number of PBRS points correlates to a percent of market value reduction during the period of continued eligibility. This program can help property owners conserve ecologically important areas while reducing their tax burden. See the following website for more information: www.co.pierce.wa.us/pc/abtus/ourorg/at/open_space.htm

6.1.5 Non-profit Organizations

Cascade Land Conservancy

Cascade Land Conservancy is a non-profit organization working to conserve land in Pierce, King, Mason, Kittitas, and Snohomish Counties. The Conservancy has led the conservation of more than 150,000 acres over the last decade including approximately 20 properties in Pierce County. The Conservancy works with landowners using tools such as land purchase or donation, conservation easements, and stewardship endowments to preserve high-quality ecosystems. See the following website for more information: www.cascadeland.org

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Friends of Pierce County

Friends of Pierce County is a nonprofit organization that involves the people of Pierce County in preserving and restoring the natural environment and promotes more livable communities. The organization seeks to serve as an interactive link coordinating communities, business, government, and other entities; educate and empower communities through public outreach; direct growth of community attributes that promote a sensible and sustainable balance of environment, equity, and economics; preserve and restore the natural ecosystem; promote livable communities with linked and shared resources; and advocate for responsible and adaptive land use and transportation planning, watershed planning and natural resource management, and environmentally friendly planning, techniques, and policies. See the following website for more information: www.friendsofpiercecounty.org/about.htm

National Fish and Wildlife Foundation

The National Fish and Wildlife Foundation (NFWF) distributes grants to non-profit organizations, local, state or federal government agencies for community-based projects that improve and restore native salmon habitat, remove barriers to fish passage, or for the acquisition of land/conservation easements on private lands where the habitat is critical to salmon species. NFWF has established local partnerships throughout Washington State through the Community Salmon Fund program to engage landowners, community groups, tribes, and businesses in stimulating smaller-scale, community-oriented habitat restoration and protection projects to aid in salmon recovery. Grants made under this program are administered by NFWF. There are currently three Community Salmon Fund partnership programs. NFWF has partnered with the Washington State Salmon Recovery Funding Board (SRFB) to administer a statewide Community Salmon Fund program that is coordinated with the individual Lead Entity groups. In addition to this SRFB Community Salmon Fund program, NFWF has partnered with both King and Pierce Counties to administer county-specific Community Salmon Fund programs in those counties. See the following website for more information: www.nfwf.org

Pierce County Biodiversity Alliance

The Pierce County Biodiversity Alliance includes a cross-section of conservation agencies and organizations that share an interest in conserving the biodiversity of Pierce County. The Alliance includes Pierce County Planning and Land Services, Washington Department of Fish and Wildlife, University of Washington, Cooperative Fish & Wildlife Unit, Metro Parks Tacoma, National Wildlife Federation, Puyallup

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River Watershed Council, Pierce County Conservation District, Crescent Valley Alliance (CVA), and Friends of the Lower White River (FLWR).

The Alliance has identified a Biodiversity Network of 16 biologically rich areas known as "biodiversity management areas" and connecting corridors that cover nearly 268,000 acres of land. The lower White River corridor is a Biodiversity Management Area (BMA) in Pierce County. Landowners in Pierce County BMAs are eligible for reduced property taxes. The Alliance has involved landowners and citizens in stewardship through rapid biological inventory (BioBlitz), data collection (NatureMapping), and community planning. See the following website for more information: www.biodiversity.wa.gov/ourbiodiversity/updatewhite_river.html

Tahoma Audubon Society

The Tahoma Audubon Society is the Pierce County chapter of the National Aubudon Society that works to conserve, restore, and steward irreplaceable natural resources throughout the Pierce County area (www.tahomaaudubon.org). Tahoma Audubon organizes community volunteers, provides public education regarding the environment, and participates in planning to protect habitats in the Pierce County and Tacoma area. Habitats important to local birds and wildlife are the focus of 2009, including: urban habitats, marine shorelines, riparian shorelines and forests, and oak woodlands and prairies.

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6.1.6 Other Possible Funding Sources

a) Aquatic Lands Enhancement Account - WA Department of Natural Resources
b) Aquatic Lands Restoration Funding - WA Department of Natural Resources
c) Bring Back the Natives - National Fish and Wildlife Foundation
d) Coastal Protection Account - WA Department of Ecology
e) Community-Based Restoration Program - NOAA
f) City Fish Passage Barrier, Stormwater and Habitat Restoration Grant Program - WA Department of Transportation
g) Embrace-A-Stream - Trout Unlimited
h) Estuary and Salmon Restoration Program (ESRP) - Puget Sound Nearshore Ecosystem Restoration Project
i) Five-Star Restoration Program - Environmental Protection Agency
j) Habitat Conservation - U.S. Fish and Wildlife Service Coastal Program
k) Landowner Incentive Program - Washington Department of Fish and Wildlife

l) Matching Aid to Restore States Habitat (MARSH) - Ducks Unlimited

m) Non-point Source Implementation Grant (319) Program, Centennial Clean Water Fund, and State Revolving Loan Fund - Environmental Protection Agency, WA State Department of Ecology

n) Pacific Grassroots Salmon Initiative - National Fish & Wildlife Foundation

o) Partners for Fish and Wildlife - U.S. Fish & Wildlife Service

p) Puget Sound Program - U.S. Fish & Wildlife Service

q) Puget Sound Wetland Restoration Program - Washington State Department of Ecology

r) Section 206: Aquatic Ecosystem Restoration Program - U.S. Army Corps of Engineers

s) Transportation Equity Act for the 21st Century (TEA-21) - Washington Department of Transportation

t) Washington State Ecosystems Conservation Program - U.S. Fish and Wildlife Service

u) Washington Wildlife Recreation Program - Interagency Committee for Outdoor Recreation

v) Wetland Protection, Restoration, and Stewardship Discretionary Funding - Environmental Protection Agency

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6.2 Approach for Public Outreach

Public education and involvement in restoration efforts is essential when implementing programmatic and site-specific opportunities located on privately-owned property. As part of this SMP update, a brochure has been developed for public dissemination that describes appropriate methods for removing invasive vegetation and replanting with native trees, shrubs, and groundcover along a river bank. The brochure will be available at the permit counter and can be provided to property-owners that have properties fronting the White or Puyallup Rivers.

The City could also consider using the public education and outreach requirement of the City's National Pollutant Discharge Elimination System (NPDES) Phase 2 Municipal Stormwater Permit to reach out to the Sumner community. The NPDES permit requires an education program be put into place that is aimed at residents, businesses, industries, elected officials, policy makers, and planning staff. The goal of the program is to reduce or eliminate behaviors that cause or contribute to

adverse stormwater impacts. The following are subject areas required to be in the program which could relate to the protection and restoration of shoreline areas:

- Impacts from impervious surfaces
- Source control BMPs and environmental stewardship actions and opportunities in the areas of pet waste, vehicle maintenance, landscaping and buffers.
- BMPs for use and storage of pesticides and fertilizers.
- Low Impact Development techniques, including site design, pervious paving, retention of forests and mature trees.

When preparing the program that addresses these subject areas, the City could incorporate information that relates to shoreline restoration, specifically as it relates to improving water quality. Public outreach for subject areas that do not relate to stormwater impacts would have to be conducted outside the NPDES program. However, the approach used for the NPDES program could be similarly applied and implemented to ensure efficient use of City staff resources.

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6.3 Timelines, Benchmarks, and Strategies for Effectiveness

In the context of the SMP update, restoration planning is a long-term effort. As stated earlier, the SMP guidelines include the general goal that local master programs "include planning elements that, when implemented, serve to improve the overall condition of habitat and resources within the shoreline area" (WAC 173-26-201(c)). The guidelines for restoration planning state that local programs should "…appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals" (WAC 173-26-201(2)(f)).

As a long-range policy plan, it is difficult to establish meaningful timelines and measurable benchmarks in the SMP by which to evaluate the effectiveness of restoration planning or actions. Nonetheless, the legislature has provided an overall timeframe for future amendments to the SMP. In 2011, Substitute House Bill 1478 amended the Shoreline Management Act (RCW 90.58.080) to establish an amendment schedule for all jurisdictions in the state. Once the City of Sumner updates its SMP, the City is required to review, and amend if necessary, its SMP once every eight years (RCW 90.58.080(4)). During this review period, the City could document progress toward achieving shoreline restoration goals. The review could include:

- Re-evaluating adopted restoration goals, objectives, and policies;
- Summarizing both planning efforts (including application for and securing grant funds) and on-the-ground actions undertaken in the interim to meet those goals; and
- Revising the SMP restoration planning element to reflect changes in priorities or objectives.

Another mechanism that may serve to establish timelines and benchmarks would be establishment of a shoreline restoration program organized like or integrated with the City's capital improvement program (CIP). Similar to an infrastructure CIP, a shoreline restoration CIP would be evaluated and updated regularly. The shoreline CIP would be focused on site-specific projects and could be funded through grants or a fee-in-lieu program developed as part of the shoreline permitting process. Further, other CIP projects, such as stormwater facility improvements, could be evaluated to determine if their design could advance shoreline restoration goals.

6.4 Constraints to Implementation

There are a number of potential complicating factors between the development of a city-wide shoreline restoration plan and on-the-ground implementation of its programs and projects. Some of these challenges are briefly summarized below:

a) Lack of funding: Designing, carrying out, and monitoring the success of restoration efforts can be an expensive undertaking, particularly at larger (e.g., watershed or reach) scales. In general, funding for restoration is limited and competition for funds extensive.

b) Landowner participation: Restoration opportunities which are located on private property can be more challenging to implement than opportunities located on public property. The property owners would need to be interested in working with the City since restoration is not a regulatory requirement. Property owners would need to fund and complete the projects on their own, or if public funding were available the City would have to negotiate with the private property owners to purchase the property or an easement on the property to accomplish the project. Such voluntary interest may not occur until shoreline landowners are educated on the benefits of restoration projects or meaningful incentives are established.

c) Urban Growth Area: Restoration opportunities which are located in the UGA pose a challenge to the City since it has no authority with those properties. When pursuing a restoration project the City would need to coordinate with

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Pierce County on the permitting process. Another option would be to wait until properties in the UGA are annexed into the city before implementing a project.

d) Project permitting: Obtaining necessary permits from local, state, and federal regulatory agencies can require substantial time and effort. Although encouraged and allowed by the SMP, complicated restoration projects may take a year or more to permit.

e) Climate change: Rising temperatures and water levels have the potential to dramatically alter Sumner's shoreline jurisdiction, processes, and functions over time. Depending on the scale of change and time period over which changes occur, restoration priorities could shift substantially within a relatively short period of time. Future restoration should be designed to consider future water elevations in shoreline areas of Sumner.

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