Appendix B

CITY OF GIG HARBOR

Shoreline Restoration Plan Element

Prepared for:

City of Gig Harbor

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ESA

Appendix B

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1.0 INTRODUCTION

This report supports the development of a restoration element to the City of Gig Harbor's Shoreline Master Program (SMP). Last amended in 1994, 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, 2008) 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.

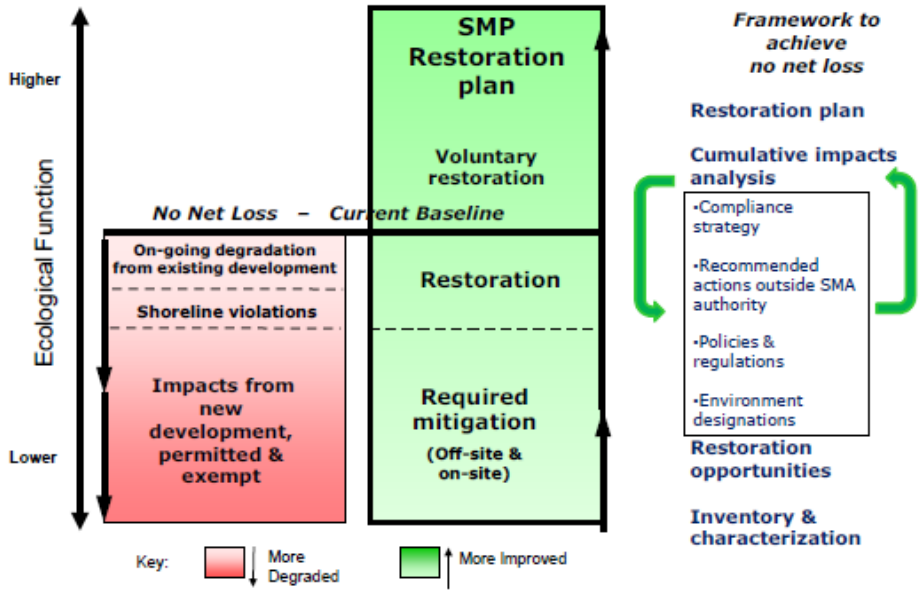
1.1 Regulatory Background

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.



Source: Department of Ecology

Figure 1. Achieving No Net Loss of Ecological Function

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.

1.2 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 these functions are 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 bulkhead replacement and/or riparian plantings). It is important to note that the guidelines do not state that local programs should or could require individual permittees to restore past damages to an ecosystem as a condition of a permit for new development (Ecology, 2004). For these reasons, the required restoration planning element focuses on the City as a whole rather than parcel by parcel, or permit by permit.

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 1-1, and provide the organization and content for this report.

Table 1-1. Restoration Planning Structure

Key elements for the shoreline restoration planning process WAC 173-26-201(2)(f)	*Section in this report*
Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration.	Assessment of Functions (Sec. 2); Restoration Opportunities (Sec. 4)
Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions.	Policy Development (Sec. 5)
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)
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)
Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals.	Implementation (Sec. 5)
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. 5)

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 *City of Gig Harbor Shoreline Inventory and Characterization* (ESA Adolfson, 2008). The City's inventory and characterization examined marine nearshore ecosystem processes that maintain shoreline ecological functions and identified impaired ecological functions. Key findings of the inventory and characterization are summarized below.

2.1 Regional Setting

The city of Gig Harbor is located on Gig Harbor Peninsula, surrounding Gig Harbor Bay, in the Kitsap Watershed (Water Resource Inventory Area (WRIA) 15). The City's shorelines (including its Urban Growth Area) outside of Gig Harbor Bay include portions of Colvos Passage (north of the bay), the Tacoma Narrows (south of the bay), and Henderson Bay / Burley Lagoon (in the northwest UGA). These areas are generally considered part of South Puget Sound and Central Puget Sound main basin.

2.2 Physical and Ecological Processes

Most of the city's topography is flat-topped hills and ridges that lie between 200 and 300 feet above sea level. The city's shoreline jurisdiction includes both steep, high, vegetated bluffs as well as the protected areas of Gig Harbor Bay and Henderson Bay. The bluffs along Colvos Passage and the Tacoma Narrows are characterized as steep, landslide and/or erosion hazard areas. These bluffs are referred to as "feeder bluffs," as natural erosion of the bluffs provide sediment to the beach below.

The shores of Colvos Passage and Tacoma Narrows are generally comprised of exposed, high-gradient bluffs fronted by narrow sand and gravel beaches. Feeder bluffs make up a large portion of these shores (Pentec, 2003). These shores are exposed to predominant southerly, and less common northerly, wind and wave conditions as well as the strong currents, most notably through the Tacoma Narrows. The wave and current induced erosion likely enhances erosional processes throughout the Tacoma Narrows, and Colvos Passage to a slightly lesser extent, specifically with regard to current-induced erosion.

Gig Harbor Bay is distinct from Colvos Passage and Henderson Bay shores in that these shores are largely encompassed with the protected shores of the barrier fronted embayment. This area is also unique in that the protected banks are low- to moderate- height and considerably more dense development occurs within the bay. This portion of the study area also has minimal large woody debris (LWD) recruitment and very little marine riparian vegetation, relative to the other shores within the shoreline planning area. Shore modifications are also abundant and largely preclude net shore-drift along the north and southwest shore of Gig Harbor Bay. Inside Gig Harbor Bay, the mouths of Donkey and Crescent Creeks form estuaries with associated wetland complexes. Gig Harbor Bay is mapped as a pocket estuary which is an important habitat for juvenile salmon (Shared Strategy, 2007).

The Henderson Bay portion of the Urban Growth Area (UGA) is primarily depositional in (geomorphic) character. The Henderson Bay / Burley Lagoon shorelines encompass the northern extent of a single, long net shore-drift cell that originates at Allen Point, south of the study area. Up-drift feeder bluffs, located south of the study area, supply much of the sediment that maintains and creates the beaches and nearshore habitats within the north UGA. The deep, north-south trending fjordal inlet of Henderson Bay is comprised of long stretches of open shore with several small embayments and sub-estuaries. The mouths of McCormick, Goodnough, and Purdy Creeks are located in the city's Henderson Bay / Burley Lagoon UGA. Estuarine wetlands are associated with these stream mouths. Henderson Bay and Burley Lagoon are mapped as pocket estuaries which are considered to be important habitats for juvenile salmon (Shared Strategy, 2007).

2.3 Habitat and Species

The Puget Sound nearshore environment provides habitat for a variety of aquatic and terrestrial species. The "nearshore" is generally considered to be an area extending from the top of bluffs

across the beach and intertidal zone, to the point where light no longer penetrates the Sound's water. Important features of the nearshore that provide habitat include:

a) Marine riparian zones (vegetated bluffs and vegetation overhanging the intertidal zone);

b) Bluffs, beaches and backshore (sediment sources, substrate, and storm berms);

c) Tidal flats (intertidal or shallow subtidal areas used by juvenile salmonids, shorebirds, and shellfish);

d) Eelgrass beds and kelp forests (feeding and rearing habitat for wide variety of marine organisms);

e) Tidal marsh and estuarine wetlands; and

f) Streams (fish and wildlife corridors and source of fluvial sediment to nearshore)

Aquatic and terrestrial species found in or near Gig Harbor that utilize the nearshore or deep waters of Puget Sound include:

a) Shellfish (clams, sea urchin, mussels, oysters, and crab);

b) Salmonids (including listed species such as Chinook, steelhead, and bull trout);

c) Forage fish (surf smelt, sand lance, and Pacific herring);

d) Shorebirds and upland birds; and

e) Marine mammals (killer whales, humpback whale, Steller sea lion).

2.4 Land Use and Public Access

Current land use in Gig Harbor is a mix of residential, waterfront commercial/business, and open space and recreation. Residential land use is currently the dominant land use extending throughout the city and its UGA. Along Gig Harbor Bay, approximately 50 percent of the land use adjacent to the shoreline is residential, concentrated in the East Gig Harbor UGA and near the mouth of Crescent Creek. The city's waterfront/downtown core in Gig Harbor Bay is a designated historic district and contains a mix of waterfront commercial, retail, restaurant and tourism oriented development; waterfront parks and piers; marinas; commercial fishing docks; and private docks. Approximately 83 percent of the land use south of the Gig Harbor Bay inlet is residential. Land uses adjacent to the shoreline of Henderson Bay and Burley Lagoon include residential and commercial.

Public access and educational opportunities are provided at approximately 19 waterfront locations in the city and its UGA. These locations include a mix of waterfront parks, public piers and docks, viewing platforms, boat launches and marinas, and street-ends fronting the water. Some public access locations at private condominium and marina developments have been

established directly through the City's shoreline permit process as a condition of approval of the permits. A number of parks and public access sites include interpretive signage related to the City's history and cultural heritage, and the natural resources and ecology of Gig Harbor Bay.

2.5 Altered Ecosystem Processes and Functions

Nearshore ecological processes in Gig Harbor's shoreline planning area have been altered primarily by "shoreline modifications" related to waterfront development, both within the bay and along Colvos Passage, the Tacoma Narrows, and Henderson Bay / Burley Lagoon. 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 are typically used to stabilize the shoreline and prevent erosion. The most commonly occurring shore modification is termed shoreline armoring, which typically refers to shore parallel structures such as armoring or riprap used to protect coastal property from erosion (Johannessen and MacLennan, 2007). These modifications alter natural process dynamics, leading to beach narrowing, lowering and decreased driftwood abundance (Johannessen and MacLennan, 2007). Shoreline armoring typically impedes sediment supply to down-drift beaches and nearshore habitats. This sediment starvation can cause or heighten erosion along down-drift shores, and can lead to changes in nearshore substrate composition from sand or mud to coarse sand, gravel, and finally hardpan. This may, in turn, decrease eelgrass, increase kelp abundance and reduce or eliminate forage fish spawning areas. Construction of shoreline armoring may cover or destroy forage fish spawning areas, eelgrass meadows and overwater structures may deprive eelgrass of light. Shore armoring that infringes on intertidal areas considerably can produce a groin-like effect, by impeding alongshore sediment transport on the up-drift side of the structure, resulting in reduced sediment transport (volume) along the down-drift shore. Dredging can excavate eelgrass or cause excessive turbidity and permanent filling of eelgrass meadows (King County DNR, 2001). Bulkheads and piers may also affect fish life by diverting juvenile salmonids away from shallow shorelines into deeper water, thereby increasing their potential for predation (Nightingale et al, 2001).

In regard to water quality, the Washington Department of Ecology maintains a list of waterbodies where tested pollutants exceed thresholds established by the state surface water quality standards (WAC 173-201(A)). Section 303(d) of the federal Clean Water Act requires Washington State to periodically prepare a list of all surface waters in the state for which beneficial uses of the water, such as drinking, recreation, aquatic habitat, and industrial use, are impaired by pollutants. This is commonly referred to as the 303(d) list. Waterbodies that do not appear on the 303(d) list may fall short of that pollutant threshold, but may not be free of pollutants. In addition, not all waterbodies are tested as part of this process. Therefore, absence from the 303(d) list does not necessarily indicate that the waterbody is not impaired.

Ecology's 2002/2004 Water Quality Assessment identifies and reports on tested waterbody segments as they relate to state water quality standards for a variety of parameters, including temperature, pH, dissolved oxygen, metals, etc. Waterbody segments are classified as Category 1, 2, 4, or 5. Category 5 waters are polluted waters that require the establishment of Total Maximum Daily Load (TMDL) limits on the specific pollutant to enter the waterbody from point

and non-point sources. In November 2005 the U.S. Environmental Protection Agency approved the list of Category 5 waters, which represents the state's 303(d) list of impaired waters. Category 4 waters are polluted but do not require a TMDL study (because a TMDL or pollution control plan is already in place or the waterbody is impaired by a non-pollutant such as low streamflow, dams, etc.). Category 2 waters are considered "waters of concern," where pollution is present but may not violate state water quality standards. Category 1 waters meet tested standards for clean waters, but may not be free of all pollutants.

Table 2-1 shows the waterbodies within or in proximity to the City's UGA marine shoreline that were evaluated for the 2002/2004 Water Quality Assessment. These waterbodies also appear on the approved 303(d) list, and/or appear on the proposed 2008 303(d) list (submitted to the Environmental Protection Agency for review). The Tacoma Narrows, Gig Harbor, Henderson Bay, and Donkey and Purdy Creeks (not shorelines of the state) are included on the list.

Table 2-1. 2002/2004 Water Quality Assessment near Gig Harbor, WA

Waterbody	***Category Listing***	***Water Quality Parameter***
Tacoma Narrows/Colvos Passage (offshore of Segments A & D)	5	Total PCBs (observed in quillback rockfish tissue)
	2	Dissolved oxygen
	1	Mercury
Gig Harbor	4C (impaired by non-pollutant)	Fish Habitat (Year 2000 biological survey showed continuous cover of ulvoid macroalgae impairing aquatic life from human causes)
Donkey Creek (aka North Creek; lower reaches and mouth in Segment C)	5	Lead
Purdy Creek (lower reaches near mouth and Segment F)	4B (pollution control plan in place)	Fecal coliform
Henderson Bay/Burley Lagoon (off shore near Segment E)	5	Fecal coliform
	2	Dissolved oxygen
	1	pH; Temperature; Ammonia-N

Source: Washington State Department of Ecology, Proposed 2008 Section 303(d) List and Integrated 2004 Section 303(d) List – WRIA 15.

Water quality sampling in the KGI Watershed has been undertaken by Stream Team volunteers and by URS Corporation technicians on behalf of Pierce County Water Programs (KGI, 2002). Samples were taken on June 1, 2000, and July 31, 2001. Fecal coliform bacteria levels in Crescent Creek were found to be in excess of the state water quality standard of 100 cfu/100ml. Nitrate levels in Goodnough Creek were slightly elevated, with levels ranging between 1.7 and 1.86 mg/L, and likely indicate the presence of nutrients or fertilizers in the system (KGI, 2002).

Potential water quality hazards exist at marinas and boat moorage facilities due to fuel spills, increased nutrients from sewage pump-out activities, increased presence of pollutants due to hull scraping and use of anti-fouling paint on boat hulls, and high concentrations of creosote-treated wood pilings and structures.

The Washington State Department of Health restricted the harvest of shellfish beds in Burley Lagoon in 1981 due to high levels of bacterial contamination. Shellfish harvest in the lagoon was upgraded to conditionally approved in 1993, yet, in January 1999 harvesting was again restricted due to high levels of fecal coliform bacteria (Haring, 2000). In 2001, 110 acres in the southern area of Burley Lagoon was re-opened to shellfish harvesting since water quality in the southern half of Burley Lagoon met state and federal water quality standards (Washington State Department of Health website, 2001). Southern areas of Burley Lagoon remain open to shellfish harvesting, however central and northern areas of the lagoon remain closed due to pollution (Washington State Department of Health website, 2008).

In addition, the Washington State Department of Health has closed the entire area of Gig Harbor Bay, and some areas of Colvos Passage immediately outside of the harbor, permanently due to pollution (Washington State Department of Health website, 2008).

The key issues related to alterations in each shoreline planning segment (as described in the Shoreline Inventory and Characterization Report) are summarized below. The shoreline ecological processes and/or functions that have been impaired or affected as a result of shoreline modifications are also described.

Table 2-2. Alterations to Ecological Processes and Functions

Shoreline Segment	*Shoreline Modifications*	*Ecological Process / Function Affected*
A – Colvos Passage / Gig Harbor Spit	Portions of Colvos Passage side have bulkheads and riprap armoring. Few structures on piles located at toe of bluff on the beach. Spit is relatively unaltered. Colvos Passage on Ecology 303(d) list as Category 5 (total PCBs), Category 2 (dissolved oxygen) and Category 1 (mercury) water. Portion of Colvos Passage permanently closed for shellfish harvesting.	Feeder bluff –sediment recruitment and transport process altered, but still functioning; Marine riparian/bluff vegetation is largely intact; Forage fish spawning habitat intact. Water quality impaired.
B – East Gig Harbor Bay	Significant armoring throughout the reach with concrete bulkheads and riprap. Over 40 single-family piers and docks and one boat ramp. Historic fill near mouth of Crescent Creek. Gig Harbor Bay on Ecology 303(d) list as a Category 4C (impaired by non-pollutant) water. Fecal coliform bacteria levels in Crescent Creek in excess of the state water quality standard Gig Harbor Bay permanently closed for shellfish harvesting.	Sediment recruitment and transport processes altered, minimal function remains. Salmonid migratory habitat degraded by shading caused by overwater structures. Forage fish habitat infringed upon by shore modifications extending in to intertidal areas. Piers and docks reduce net shore-drift where installed in beach substrate and preclude access to habitat. Marine riparian areas – largely eliminated. Fill areas eliminating wetland and riparian habitat and processes. Water quality impaired.
C – Downtown Gig Harbor	Significant armoring between Crescent and Donkey Creeks. Fill areas also associated with the mouths of both creeks. Large concentrations of piers, docks, and marinas are found throughout the southern portion of the reach. Little marine riparian vegetation remains throughout the reach. Gig Harbor Bay on Ecology 303(d) list as a Category 4C (impaired by non-pollutant) water. Donkey Creek on Ecology 303(d) list as a Category 5 (lead) water. Gig Harbor Bay permanently closed for shellfish harvesting.	Sediment recruitment and transport processes largely eliminated by shore modifications. Salmonid migratory habitat degraded by shading caused by overwater structures. Potential forage fish habitat infringed upon by shore modifications extending into intertidal areas. Marine riparian areas – largely eliminated. Fill areas eliminating wetland and riparian habitat and processes. Water quality impaired.

Shoreline Segment	***Shoreline Modifications***	***Ecological Process / Function Affected***
D – Tacoma Narrows	Moderate armoring is found in the northern portion of the reach, the rest of the reach is relatively free of shore modifications. Riparian vegetation is intact throughout the reach. Tacoma Narrows on Ecology 303(d) list as Category 5 (total PCBs), Category 2 (dissolved oxygen) and Category 1 (mercury) water.	Feeder bluff – sediment recruitment and transport processes are altered in the northern portion of the reach, but are still largely functional. Marine riparian/bluff vegetation is largely intact; Forage fish spawning habitat intact. Water quality impaired.
E – Henderson Bay	Significant armoring is found throughout the reach. Riparian areas have been impacted by residential development and landscaping. Henderson Bay on Ecology 303(d) list as Category 5 (fecal coliform), Category 2 (dissolved oxygen) and Category 1 (pH; temperature; ammonia-N) water. Goodnough Creek had slightly elevated nitrate levels, likely indicating the presence of nutrients or fertilizers in the system.	Sediment sources have likely been slightly impacted by armoring. Armoring likely has resulted in other indirect effects to beaches, especially where shore modifications infringe on the intertidal zone. Marine riparian areas are narrow. Water quality impaired.
F – Burley Lagoon	Shore armoring is found throughout the reach. Burley Lagoon on Ecology 303(d) list as Category 5 (fecal coliform), Category 2 (dissolved oxygen) and Category 1 (pH; temperature; ammonia-N) water. Purdy Creek on Ecology 303(d) list as Category 4B (pollution control plan in place for fecal coliform) water. Central and northern areas of Burley Lagoon are closed for shellfish harvesting due to pollution.	Armoring does not disrupt primary sediment sources but does largely eliminate marine riparian areas. Marine vegetation is moderately intact, but narrow in places. Water quality impaired.

3.0 RESTORATION PLANNING

3.1 Restoration Framework

A great deal of attention and resources have been focused on Puget Sound restoration activity in recent years. These efforts stem from both the listing of Puget Sound salmonid species as threatened and endangered, as well as a more broad awareness and concern for the overall ecological health of Puget Sound. Within the Sound, the nearshore environment – where the land meets the water - is considered a critical element of the Puget Sound ecosystem. The Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) is a multi-agency regional entity whose mission is to protect and restore the functions and natural processes of the Puget Sound nearshore ecosystem. PSNERP has developed strategic principles and concepts intended to guide ecosystem recovery (PSNP, 2004). The principles and concepts, summarized briefly below, provide a framework for Gig Harbor's shoreline restoration planning.

- **Purpose and Need**. Potential restoration projects should be consistent with overarching goals and objectives.

- **Restoration Principles**. Restoration planning should be strategic and restoration design should be based on carefully developed goals and objectives. Follow-through, or monitoring, should be employed, including development of performance criteria and use of adaptive management in project development.

- **Monitoring Principles**. Three types of monitoring are defined: 1) implementation monitoring to track which potential programs and projects are carried out; 2) effectiveness monitoring to determine if habitat objectives of the program or project have been achieved; and 3) validation monitoring to confirm whether proposed restoration actions are achieving the overall objectives for restoration. Monitoring should be driven by specific questions, goals, and objectives and should be used as the basis for determining if restoration goals are being met. Monitoring should be long-term and interdisciplinary. Another component of monitoring is information management; data should be well documented and available to others.

- **Adaptive Management Principles**. Adaptive management is a process that uses research and monitoring to allow projects to proceed, despite inherent uncertainty and risk regarding its consequences. Adaptive management is best accomplished at a regional or watershed scale, but can be used at a project level to increase knowledge about ecosystems and how they respond to restoration actions.

3.2 Existing Plans and Programs

A number of regional and Puget Sound-wide planning efforts have been developed to address water resource management, water quality, and salmon habitat recovery. 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 Puget Sound region.

3.2.1 Puget Sound Partnership

In 2007 the Washington Legislature passed the Engrossed Substitute Senate Bill 5372, creating the Puget Sound Partnership (PSP), an entity charged with developing and coordinating an environmental agenda for recovery of the health of Puget Sound by the year 2020. The PSP was preceded by the Puget Sound Action Team, which laid the foundation for the work now being undertaken by the PSP. The *2007-2009 Puget Sound Conservation and Recovery Plan* was the last biennial plan produced by the Puget Sound Action Team and continues to guide PSP's work as the 2020 Action Agenda is created (PSP, 2007).

The PSP has identified the following four initial strategic priorities to guide development of the 2020 Action Agenda:

- Ensure that activities and funding are focused on the most urgent and important problems facing the Sound.
- Protect the intact ecosystem processes that sustain Puget Sound.
- Restore ecosystem processes that will sustain Puget Sound.
- Prevent the sources of water pollution.

These recovery efforts have a combined state agency budget of almost $460 million dollars, which is linked to accomplishing specific goals associated with the core priorities.

3.2.2 Puget Sound Nearshore Ecosystem Restoration Project (PSNERP)

As described above, the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) is a large-scale, multi-agency initiative to address habitat restoration needs in the Puget Sound basin. Nearshore Project goals are to identify significant ecosystem problems, evaluate potential solutions, and restore and preserve critical nearshore habitat. PSNERP represents a partnership between the U.S. Army Corps of Engineers (Corps), state and federal government organizations, Indian tribes, industries and environmental organizations.

A General Investigation Reconnaissance Study conducted by the U.S. Army Corps of Engineers in 2000 (USACOE, 2000) identified a direct link between healthy nearshore habitat and the physical condition of the shoreline. The study identified several actions that would be central in restoring nearshore processes to a more natural state:

- Providing marshes, mudflats, and beaches with essential sand and gravel materials;
- Removing, moving and modifying artificial structures (bulkheads, rip rap, dikes, tide gates, etc.);

- Using alternative measures to protect shorelines from erosion and flooding; and
- Restoring estuaries and nearshore habitat such as eelgrass beds and kelp beds (USACOE, 2000; PSNP, 2002).

PSNERP also provides outreach and guidance materials related to nearshore ecosystem restoration principals, concepts, and methods of implementation.

3.2.3 Shared Strategy for Puget Sound: Puget Sound Salmon Recovery Plan

Shared Strategy for Puget Sound (Shared Strategy) is a collaborative effort between local stakeholders and regional leaders to protect and restore salmon runs across Puget Sound that was initiated as a result of Endangered Species Act (ESA) listings of salmonid species in the Puget Sound region. Shared Strategy engages local citizens, tribes, technical experts and policy makers to build a practical, cost-effective recovery plan endorsed by the people living and working in the watersheds of Puget Sound.

Shared Strategy has developed a salmon recovery plan (Shared Strategy, 2007) that provides a blueprint for salmon recovery strategies throughout Puget Sound and incorporates, by reference, local watershed plans for salmon recovery. Amongst other strategies described in the plan, Shared Strategy describes their 'Top 10 Actions Needed for Salmon Recovery', many of which have additional beneficial impacts for humans.

Shared Strategy was the non-profit organization that drafted the Puget Sound Salmon Recovery Plan, adopted by NOAA in January 2007. The Puget Sound Partnership took over responsibility for the implementation of the salmon recovery plan in January 2008. NOAA revises this recovery plan each year with an updated 3 Year Work plan for each of the 14 geographic chapters. Gig Harbor's jurisdiction is included in the "West Sound Watersheds" 3 Year Work Plan for salmon recovery plans and programs.

3.2.4 Water Resource Inventory Area (WRIA) 15

The city of Gig Harbor is located in the East Kitsap Region of Water Resource Inventory Area (WRIA) 15. Although disbanded after a vetoed final watershed plan in 2005, the watershed planning unit did produce various reports and studies which provide guidance in watershed planning (Ecology, 2008).

The West Sound Watersheds Council was formed in 2007 to replace the East Kitsap Salmon Habitat Restoration Committee. The West Sound Watersheds Council is the Lead Entity organization for salmon recovery in East WRIA 15. The Council revises the plans and programs for salmon recovery strategies every year through the Puget Sound Partnership's 3 Year Work Program updates. The plan is focused primarily on near shore protection and restoration. Identified needs for nearshore and lower watershed areas relevant to the City include but are not limited to:

a) Replacement of culvert with bridge to improve tidal function at Crescent Creek;

b) Restoration and daylighting of Donkey Creek;

c) Protection of naturally eroding bluffs;

d) Protection and/or restoration of salt marsh habitat and estuarine function;

e) Removal of intertidal fill;

f) Removal of shoreline armoring or replacement with soft-shore or bioengineering alternatives;

g) Removal of unused creosote pilings;

h) Protection of remaining habitat through conservation easements or purchase; and

i) Proper treatment of stormwater and wastewater (Kitsap, 2004).

3.2.5 Gig Harbor Basin Plan

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. A basin plan for the Gig Harbor watershed was issued in 2003.

The Gig Harbor Basin is bounded on the west by Carr Inlet and Henderson Bay, on the east by Tacoma Narrows, and on the south by Hale Passage. Several drainage divides that are located close to the Pierce/Kitsap County line form the northern boundary of the basin. The basin covers an area of approximately 42.4 square miles and includes the entire jurisdiction of the City of Gig Harbor. The major streams in the area include Crescent, Wollochet, Artondale, Goodnough, McCormick, and Donkey. The basin supports approximately 42,800 residents.

The Gig Harbor Basin Plan identified and evaluated surface water management issues in the basin and recommended a comprehensive suite of projects and programs to reduce flood hazards, and to improve associated water quality and habitat throughout the basin. The Basin Plan is a 10-year plan which will guide annually-updated work plans for capital improvement projects and programmatic measures.

4.0 RESTORATION PRIORITIES AND OPPORTUNITIES

4.1 Restoration Priorities

The East Kitsap Peninsula Salmon Recovery Strategy (WRIA 15) (Kitsap, 2004) provides a watershed scale approach to prioritizing restoration efforts. While this work is focused on salmon recovery, the report notes that the emphasis of the strategy is a multi-species, ecosystem approach. The strategy included preliminary action recommendations for nearshore restoration and prioritization criteria. The prioritization method employed by the WRIA 15 Lead Entity includes a scoring system, which considers several factors:

- Watershed location: ranking of nearshore project opportunities relative to priority estuaries across the watershed;
- Spatial scale: the size of a project in terms of acreage of habitat protected or restored;
- Ecological scale: the potential for a project to address multiple ecosystem processes (such as estuary restoration that benefits both riverine and nearshore processes); and
- Temporal scale: the potential for a project to yield long-term beneficial effects to nearshore processes, with minimal long-term maintenance needs.

The strategy also acknowledged that because restoration can be a long and expensive process, preserving and protecting existing high quality habitat is critical to achieving long term recovery goals. That is, the restoration strategy begins with preserving and protecting existing habitat and areas where shoreline ecological functions are intact. Within this larger watershed context, a preliminary qualitative (high, medium, low) project ranking system is employed when considering restoration opportunities in Gig Harbor.

High priority projects will typically:

a) Address multiple ecosystem processes and/or functions (e.g.,, habitat and sediment transport process);

b) Have opportunity for multiple funding sources;

c) Include freshwater tributary channels and their nearshore estuaries; and/or

d) Not require additional property acquisition.

Medium priority projects will typically:

a) Address limited ecosystem functions;

b) Be eligible for multiple funding sources; and

c) Require property acquisition or be outside of the city's control (e.g., UGA).

Low priority projects will typically:

a) Benefit single ecosystem functions;

b) Will be used as mitigation to offset impacts elsewhere;

c) Not be eligible for multiple funding sources; or

d) Require property acquisition or be outside of the city's control (e.g., UGA).

This ranking system is applied to the opportunities identified to-date, as described in Table 4-1 below. Note that opportunity areas identified for "protection" only are considered high-priority. Protection of these areas will likely be achieved through existing or updated shoreline development regulations, rather than site-specific project proposals for shoreline restoration. These areas are ranked "high" regardless of whether they are in the city limits or UGA. The West Sound Watersheds Council 2010 3-year work program identifies nearshore habitat as the highest priority for investment.

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 Gig Harbor.

Education and Incentives:

a) Educate property owners about proper vegetation/landscape maintenance (including preservation of native vegetation along stream mouths/nearshore 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 over-water structures and encouraging soft shore protection where shore protection is unavoidable.

d) Educate boaters about proper waste disposal methods, anchoring techniques, and other best boating practices to minimize habitat damage and prevent water quality contamination.

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

Marine Nearshore:

a) Remove armoring and bulkheads from publicly owned marine sites including parks, wherever feasible.

b) Design overwater structures to allow light penetration for protection of aquatic habitat.

c) Encourage removal of creosote pilings, docks or other contaminants or derelict structures from the nearshore environment. The replacement of pilings that support historic structures listed on the city's Register of Historic Places should be exempt from this provision.

d) Remove derelict vessels from nearshore areas.

e) Work with the shellfish aquaculture industry, Tribes, Pierce County, and non-government organizations to develop and implement Best Management Practices (BMPs) for environmentally sustainable aquaculture.

f) Remove blockages to small tributaries to the nearshore such as culverts, fill and structures.

g) Encourage a gradual realignment or retreat of structures from the bluff crest along Colvos Passage and Tacoma Narrows to ensure protection of feeder bluffs and riparian vegetation.

Infrastructure:

a) Inspect, maintain, and repair leaking or unauthorized septic systems to prevent nutrient and bacteria loading in streams and bays. Where possible, public sewer systems should be installed to replace on-site septic systems.

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

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.

b) Coordinate SMP restoration with West Sound Watersheds Council to align with projects prioritized in the most current 3-year work program.

c) Improve water quality to provide safe water for swimming and producing/consuming fish and shellfish by coordinating with Tacoma-Pierce County Health Department, West Sound Watersheds Council and Public Works and Utilities – Surface Water Management.

4.2.2 Site-specific Restoration Opportunities

Table 4-1 below summarizes protection and restoration opportunities as described in the Shoreline Inventory and Characterization Report (ESA Adolfson, 2008) and the West Sound Watersheds Council 2010 3-year work program. The opportunities described are generally 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, as shown on Maps 1 and 2 at the end of this document, specific opportunity areas may apply to more than one location along the shoreline. Table 4-1 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. Short term activities also include those identified in the West Sound Watersheds Council 2010 3-year work program.

Medium term (MT) (approximately 3-5 years) restoration projects could include those that enhance Gig Harbor 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.

Table 4-1. Restoration Opportunities

Planning Segment	*Opportunity Area*	*Description*	*Ecological Functions/Processes Addressed*	*Preliminary Ranking*	*Timeline*
Segment A - Colvos Passage and Gig Harbor Spit	A-1 (Protection)	Protect potential sources of large woody debris. Limit shoreline armoring. Residential structures on beach or just upland from beach could be encouraged to remove unnecessary armoring and/or replace with bio-engineered stabilization. Investigate potential to remove structures that do not appear to be actively used.	LWD recruitment. Nearshore habitat (structure) forming processes. Sediment sources. Nearshore sediment processes.	High	LT
	A -2 (Protection and Enhancement)	Limit further traditional bulkhead installation and encourage soft-shore alternatives. Residential structures on beach or just upland from beach could be encouraged to remove unnecessary armoring and/or replace with bio-engineered stabilization. Investigate potential to remove structures that do not appear to be actively used.	Sediment sources. Nearshore sediment processes, Nearshore spawning grounds. Nearshore habitat (structure) processes.	High	LT
Segment B – East Gig Harbor	B-1 (Protection)	Protect existing vegetated riparian and wetland area associated with Crescent Creek estuary. Continue to pursue the purchase of property and conservation easements in the Crescent Creek watershed. Replace Crescent Creek culvert.	Riparian structure/Nearshore habitat. Riparian structure and function. Stream and riparian habitat function and processes. Fish passage.	High	LT ST (culvert)

Planning Segment	***Opportunity Area***	***Description***	***Ecological Functions/Processes Addressed***	***Preliminary Ranking***	***Timeline***
Segment B – East Gig Harbor	B-2 (Protection and Enhancement)	Limit additional traditional bulkheads or overwater structures in intertidal area. Recruit willing owners to replace existing solid decking. Widen road crossing; look for opportunities to purchase and remove buildings that are in the estuary. Encourage soft-shore alternatives. Enhance riparian vegetation and remove derelict structures.	Nearshore sediment processes, Nearshore habitat function. Riparian habitat function and processes	Medium	LT
	B-3 (Enhancement and Restoration)	Explore redevelopment of City design standards (Gig Harbor Municipal Code 17.99 Design Manual) to increase light-penetration of over-water structures. Recruit willing owners to replace existing solid decking. Reduce impact of shore armoring through removal of existing unnecessary armoring or use of soft-shore alternatives. Remove derelict structures. Enhance marine riparian vegetation.	Riparian habitat (structure) processes. Nearshore sediment sources, Nearshore habitat (structure) processes. Riparian habitat (structure) processes.	Medium	Design standards: ST Remaining opportunities: LT

Planning Segment	***Opportunity Area***	***Description***	***Ecological Functions/Processes Addressed***	***Preliminary Ranking***	***Timeline***
Segment C – Downtown Gig Harbor	C-1 (Protection and Restoration)	Protect remaining estuarine wetlands associated with Donkey Creek. Reduce impact of shore armoring through removal of existing unnecessary armoring or use of soft-shore alternatives. Enhance marine riparian vegetation. Purchase property and conservation easements in the Donkey Creek watershed.	Nearshore habitat function. Nearshore habitat (structure) processes, Nearshore sediment processes. Nearshore habitat (structure) processes. Stream and riparian habitat function and processes.	High	ST
	C-2 (Enhancement)	Consider soft shore protection and marine riparian habitat enhancement at several locations. Potentially incorporate habitat enhancements as part of wastewater outfall extension.	Nearshore habitat (structure) processes, Nearshore sediment processes.	Medium	Wastewater outfall: MT Remaining opportunities: LT
	C-3 (Protection and Restoration) *(not shown on map)*	Remove unused creosote piles within the property limits of City projects. Control beach erosion through the extension of existing stormwater outfalls to deeper water and through maintenance of stormwater outfall armoring at discharge locations.	Water quality	Medium	MT

Planning Segment	***Opportunity Area***	***Description***	***Ecological Functions/Processes Addressed***	***Preliminary Ranking***	***Timeline***
Segment D – Puget Sound Narrows	D-1 (Protection and Enhancement)	Protect potential source of large woody debris. Protect feeder bluffs and limit shoreline armoring. Potential removal of derelict structures and riparian enhancement in place of residential lawns.	LWD recruitment. Nearshore habitat (structure) forming processes. Sediment sources. Nearshore sediment processes. Riparian habitat function and processes	High	LT
Segment E – Henderson Bay	E-1 (Enhancement)	Remove bulkheads. Stream and riparian enhancement at McCormick Creek. Replace culvert on McCormick Creek with larger culvert to allow fish migration to an upstream wetland complex. Replace invasive vegetation with native trees and shrubs.	Sediment sources. Nearshore sediment processes. Stream and riparian habitat function and processes. Fish passage.	Medium	LT
	E-2 (Protection and Enhancement)	Protect existing densities of woody debris. Encourage soft armoring, stream channel enhancement at Goodnough Creek and riparian plantings. Replace Goodnough Creek culvert.	Nearshore habitat (structure) and processes. Nearshore sediment processes. Riparian habitat (structure) and processes. Fish passage.	Medium	LT

Planning Segment	***Opportunity Area***	***Description***	***Ecological Functions/Processes Addressed***	***Preliminary Ranking***	***Timeline***
Segment F – Burley Lagoon	F-1 (Protection and Enhancement)	Replace existing shore armoring with soft-shore alternatives. Conduct sand spit and riparian vegetation plantings.	Nearshore sediment sources, Nearshore habitat (structure) processes. Riparian habitat (structure) and processes.	Medium	LT
	F-2 (Protection and Enhancement)	Mouth of Purdy Creek – removal of debris and dilapidated structures, riparian enhancement, and restoration of shoreline to increase estuarine and mudflat habitat Restoration of riparian vegetation along the lower section of Purdy Creek to enhance temperatures and habitat quality for juvenile salmonids. Encourage soft armoring and riparian plantings.	Riparian habitat (structure) and processes. Nearshore habitat function and processes. Fish passage.	Medium	LT

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. Some projects incorporate restoration elements directly, while others may provide an opportunity for restoration coupled with the design and implementation of the primary capital improvement. Table 4-2 summarizes information from the City's current CIP list (City of Gig Harbor, 2007). All of the projects listed are considered part of the City's six-year CIP, as described in the Comprehensive Plan, last amended in 2007.

Table 4-2. Existing Capital Improvement Projects

Project	*Projected Year*	*Cost*	*Primary Funding Source*	*Status and Shoreline Benefits*
Treatment Plant Effluent Outfall Construction Phase II from GH out to Puget Sound	2011	$8,000,000	PWTF/SRF/revenue bonds/Connection Fees/Sewer Rates	Project complete; Extension will improve water quality in bay; Project includes removal of abandoned creosote pilings
Austin Estuary Park	2008	$100,000	Local	Acquisition complete; Will enhance estuarine vegetation and protect salt marsh in perpetuity through conservation easement.
Crescent Creek West Shore Acquisition	2008-2011	$95,000	Local/Pierce County Conservation Futures	Acquisition in negotiation; Will protect wetlands in perpetuity through conservation easement.
Eddon Park Environmental Cleanup	2007-2008	$2,000,000	Brownfield Grants/Harbor Cove Escrow Account	Sediment remediation, removal of creosote pilings and bulkhead completed; Will include salt marsh enhancement.
Donkey Creek Day-Lighting	2009	$1,200,000	State/Federal Salmon Recovery Grants/Earmarks	Purchase of land/easement complete; partial funding for implementation secured; Project could be implemented in phases; Potential for multiple benefits to shoreline habitat functions.
Donkey Creek Day-Lighting, Street and Bridge Improvements	2009	$3,250,000	Federal/State Earmarks and Grants	

Source: City of Gig Harbor, 2007

5.0 POLICY DEVELOPMENT

Given the nature and scale of alterations to the Puget Sound nearshore in Gig Harbor and its UGA, it is important that the City work with other regional entities to pursue significant restoration opportunities. While the City may be able to pursue some restoration or enhancement opportunities without regional partners, these types of projects will typically be smaller scale, lower priority actions (e.g., native plantings).

Five general policies have been identified that the City could adopt to promote the goal of restoring ecosystem function within the Puget Sound nearshore ecosystem. The policies are not listed in order or priority.

Policy 1. Identify specific restoration opportunities where the City can support or work with another lead agency.

Intent: Encourage the City to support restoration efforts throughout the watershed and throughout its UGA.

Policy 2. Identify specific restoration opportunities where the City can take the lead with support from other regional entities.

Intent: Encourage the identification of high-priority restoration projects which the City can lead. Such projects may be smaller scale or address site-specific habitat improvements within the context of larger ecosystem restoration efforts.

Policy 3. Incorporate habitat enhancement elements into the design and implementation of public infrastructure improvement projects.

Intent: Lead by example by incorporating culvert replacements, bulkhead replacements, riparian plantings, and other habitat enhancement measures into publicly funded projects that are located or pass through the nearshore environment.

Policy 4. Use this restoration framework to integrate compensatory mitigation projects into the broader restoration vision for the city.

Intent: Recognize that future development allowed under the SMP may have unavoidable adverse impacts to shoreline functions. In those cases, the restoration planning element of the SMP should help inform development of appropriate mitigation for those adverse impacts.

Policy 5. Educate landowners and encourage public involvement in the restoration of the shoreline.

Intent: Provide outreach and technical support to shoreline landowners to better inform and support voluntary restoration of native vegetation and alternative bank stabilization techniques on private property. Present effective stormwater management techniques to landowners to help improve the water quality of Puget

Sound. These techniques would be provided during the City's administration of the Phase 2 National Pollution Discharge Elimination System (NPDES) permit for Gig Harbor's wastewater treatment plant. This policy is also intended to provide opportunities for the citizens of Gig Harbor to take part in, and learn about, the restoration of the city's shorelines. Example events could include: clean-up days, invasive species removal, native plantings, monitoring projects, and low impact development techniques.

Policy 6 Improve water quality in Gig Harbor Bay through the use of low impact development techniques; vegetation restoration; treatment and removal of hazardous materials; and stormwater management, and improved sanitary sewage pump-out facilities for recreational boaters.

Intent: Encourage developers and property owners to utilize the low impact development techniques in the Gig Harbor Stormwater Management and Site Development Manual, and provide increased access to sanitary sewage pump-out facilities for recreational boaters.

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 Gig Harbor, the greatest likelihood of obtaining funding would result from continued participation in the West Sound Watersheds Council and the North Central Action Area local integrating organizations and/or strategic partnering with Kitsap and Pierce Counties and state and federal agencies. Targeting funding requests to address bulkhead replacement with soft-shore alternative bank stabilization 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 Gig Harbor are described below.

6.1.1 State and Regional Programs

6.1.1.1 Puget Sound Partnership (PSP)

The state legislature has appropriated a total of $460 million for state agencies and university education programs for implementing the *2020 Action Agenda*. The City of Gig Harbor falls within the North Central Puget Sound Action Area and Henderson Bay falls within the South Sound Puget Sound Action Area, two of seven action areas identified by PSP.

6.1.1.2 Puget Sound Watershed Protection & Restoration Grant Program

The Environmental Protection Agency through the Washington Department of Ecology is offering watershed grants to applicants within the 14 Puget Sound Salmon Recovery Planning Areas. The West Sound Watersheds Council is the recipient of these funds, coordinated by the Puget Sound Partnership.. Local governments, tribes, watershed entities and non-profit groups are eligible for these grants. The focus of the grants is to identify opportunities and barriers for the protection and restoration of water quality, water quantity, habitat protection and habitat restoration within the Puget Sound Basin.

6.1.1.3 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 500 projects.

6.1.1.4 South Puget Sound Salmon Enhancement Group

The South Puget Sound Salmon Enhancement Group is a 501(c)(3) non-profit organization that works to protect and restore South Puget Sound salmon populations and aquatic habitat through scientifically informed projects, community education, and volunteer involvement. The group works in cooperation with landowners and other organizations to help plan, fund, carry out, and monitor fishery enhancement and habitat restoration projects. Over 100 projects have been completed since the group formed in 1990.

The Washington State Legislature formed salmon enhancement groups in 1990 as a means of directly involving communities, citizen volunteers, and landowners in salmon recovery. Enhancement groups are funded by surcharges on sport and commercial fishing licenses and the sale of eggs and carcasses from state hatcheries.

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 (http://www.piercecountycd.org/).

The PCD works with interested landowners to develop conservation plans that identify current conditions and economically viable alternative and best management practices (BMPs) to improve productivity while protecting soil and 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. (http://www.piercecountycd.org/streamteam.html)

6.1.3 Pierce County Programs

6.1.3.1 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 Gig Harbor SMP as future restoration or conservation sites can be nominated by the City, or an agency, for purchase through this County-sponsored program. The City has taken advantage of this program in recent years to acquire land at the Austin Estuary Park site and is currently working toward acquisition of the west shore of Crescent Creek through this same program.

6.1.3.2 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. (http://www.co.pierce.wa.us/pc/abtus/ourorg/at/open_space.htm)

6.1.4 Other Non-profit Organizations

6.1.4.1 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. (http://www.cascadeland.org/)

6.1.4.2 Crescent Valley Alliance

The Crescent Valley Alliance was formed by Gig Harbor and Crescent Valley residents in the fall of 2006 as a result of a wildlife survey by landowners, governmental and environmental agencies. This study confirmed that the Crescent Valley riparian system (Crescent Lake, Creek and Estuary) comprises one of the most pristine, biologically rich watersheds in Pierce County and is worthy of protection. A Conservation Action Plan was written identifying potential threats to the quality of this environment and establishing measures to ensure its preservation. The Crescent Valley Alliance is a community wide effort that depends on volunteers for a variety of activities (http://www.crescentvalleyalliance.org/).

6.1.4.3 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.
(http://www.friendsofpiercecounty.org/about.htm)

6.1.4.4 Great Peninsula Conservancy

The Great Peninsula Conservancy is a non-profit organization working in Mason, Kitsap, and western Pierce Counties. As of 2007 the Conservancy had protected more than 1,900 acres through acquisition, conservation easements, and project partnerships. Projects include the South Sound Preserve on the Key Peninsula and Homestead Park on the Gig Harbor Peninsula. The Conservancy's Streams and Estuaries Initiative focuses on partnerships with government agencies, tribes, community groups, and other conservation organizations to protect streams and estuaries with high ecological and public benefits. (http://www.greatpeninsula.org/)

6.1.4.5 Harbor WildWatch

Harbor WildWatch provides educational opportunities to people in Gig Harbor, Pierce County and the Key Peninsula. The organization provides interpretive programs at local beaches, public lectures, school workshops, and a junior naturalist program. They have also published reference guides and brochures that are available to the public. (http://www.harborwildwatch.org/)

6.1.4.6 KGI Watershed Council

The purpose of the Key Peninsula-Gig Harbor-Islands (KGI) Watershed Council is to preserve, protect and restore the watershed by implementing the KGI Watershed Action Plan through activities that foster collaboration and involvement. The Council participates in local watershed

planning processes, provides educational workshops, facilitates restoration and preservation activities with local community members and regional stakeholders, and coordinates the Lu Winsor Environmental Grant Program, which has provided over $8,000 in grants annually to community organizations since 2003. (http://www.piercecountywa.org/pc/services/home/environ/water/ps/kgi/main.htm)

6.1.4.7 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. (www.nfwf.org)

6.1.4.8 People for Puget Sound

People for Puget Sound is a non-profit organization founded in 1991 to protect the health of Puget Sound. Key programs address community-based restoration, oil spill prevention, stormwater management, toxics, septic systems, public involvement and education. People for Puget Sound has worked with thousands of volunteers to restore over 40 miles of shoreline and 20 salt marshes, beaches, and estuaries. (http://pugetsound.org/)

6.1.4.9 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 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 learning and stewardship through rapid

biological inventory (BioBlitz), data collection (NatureMapping), and community planning. (http://www.biodiversity.wa.gov/ourbiodiversity/updatewhite_river.html)

6.1.4.10 West Sound Watersheds Council

The West Sound Watersheds Council coordinates restoration activities in east Kitsap County and west Pierce County in collaboration with federal, state and regional efforts. Its goal is to identify, prioritize, and implement actions to conserve and recover the Puget Sound ecosystem, salmon and water resources for people, fish and wildlife. (http://www.westsoundwatersheds.org/)

6.1.5 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

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. The City could 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 Gig Harbor 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.

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)). The Puget Sound Nearshore Partnership restoration framework described previously (PSNERP, 2004) provides a general roadmap for assessing restoration actions and revising the approach to meeting restoration goals. It includes the following objectives:

- Monitor post-restoration conditions;
- Adaptively manage restoration projects; and
- Use monitoring and maintenance results to inform future restoration activities.

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 2003, Substitute Senate Bill 6012 amended the Shoreline Management Act (RCW 90.58.080) to establish an amendment schedule for all jurisdictions in the state. Once the City of Gig Harbor updates its SMP, the City is required to review, and amend if necessary, its SMP once every seven 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.

Finally, the City could develop performance criteria for monitoring shoreline restoration and mitigation projects. A GIS-based database to document and track projects could be developed as well. This would assist in future evaluations (once every seven years) of the SMP program in terms of meeting restoration and "no-net-loss" 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 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 sea levels have the potential to dramatically alter Gig Harbor'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 sea level rise and future water elevations in shoreline areas of Gig Harbor.

7.0 CONCLUSIONS

The City of Gig Harbor's shorelines have been altered and developed to varying degrees throughout the city and UGA. However, the shorelines still maintain ecological processes and provide important habitat functions to a variety of fish and wildlife species.

The City is already initiating some of the high priority opportunities such as the projects at Donkey Creek and the Eddon Boat property, and should continue with those efforts.

Of the high priority opportunities: 1) protecting large wood debris and marine riparian vegetation may require specific policy and code revisions; 2) removing, limiting, and/or replacing traditional shore armoring will require substantial public education efforts and development of regulations or incentives.

The West Sound Watersheds Council is the Lead Entity organization for salmon recovery in East WRIA 15. The Council is responsible for facilitating natural resource planning, conservation, and restoration activities in collaboration with federal, state and regional efforts. West Sound Watersheds will be developing a strategy for protection and restoration of habitat for ecosystem recovery, which will inform the City's restoration efforts.

Policies and regulations for protection and restoration have been developed for areas currently outside of the City's control (i.e., its UGA, including East Gig Harbor Bay; Colvos Passage; the Gig Harbor spit; Tacoma Narrows, and Henderson Bay/Burley Lagoon). This has been accomplished through development of shoreline environment designations and pre-designating areas so that development occurs in a manner consistent with the City's goals and as areas are annexed, the City's shorelines are managed consistently through one SMP program.

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