Chapter 3 SHORELINE INVENTORY AND RESTORATION PLANNING SUMMARY

3.1 Summary of Baseline Conditions

The City of Gig Harbor's first step towards developing the SMP update was to prepare a shoreline inventory and characterization report and map folio, consistent with the current state shoreline guidelines. The inventory and characterization describes current shoreline conditions and provides a basis for updating the City's SMP goals, policies, and regulations. The report evaluates functions and values of resources in shoreline jurisdiction, and explores opportunities for conservation and restoration of ecological functions. The report also inventoried existing shoreline uses in Gig Harbor, and evaluated the potential for future shoreline development.

The City has also prepared a shoreline restoration plan, consistent with the state shoreline guidelines. The Restoration Plan identifies both programmatic and site specific opportunities for restoring shoreline ecological functions that have been impaired or altered as a result of past development activities. The Restoration Plan prioritizes potential restoration opportunities and identifies potential partnerships and funding mechanisms for implementing voluntary restoration actions.

This summary describes key findings of the Shoreline Inventory and Characterization Report; shoreline management recommendations stemming from those findings; and recommendations for pursuing shoreline restoration in Gig Harbor. The Shoreline Inventory and Characterization Report and map folio is included as Appendix A to the SMP; the Shoreline Restoration Plan is included as Appendix B to the SMP.

3.1.1 Regional Setting

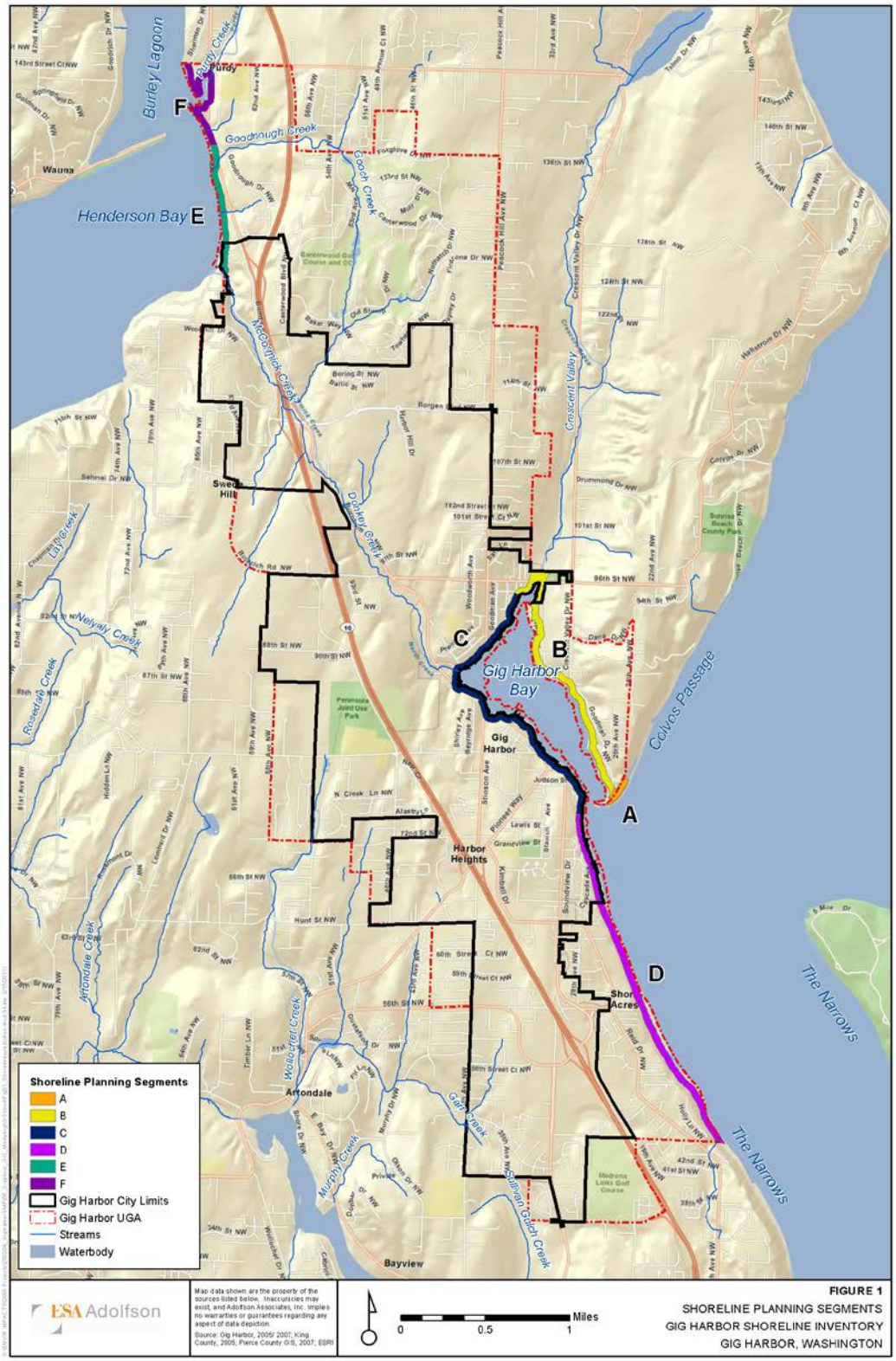
The City of Gig Harbor is located on Gig Harbor Peninsula, surrounding Gig Harbor Bay, in the Kitsap Watershed (Water Resource Inventory Area (WRIA) 15), Pierce County. The City's shorelines (including its Urban Growth Area) outside of Gig Harbor Bay include portions of Colvos Passage (north of the bay), the Tacoma Narrows (south of the bay), and Henderson Bay / Burley Lagoon (in the northwest portion of the City and UGA). These areas are generally considered part of South Puget Sound. For the purposes of the inventory, the City's shoreline jurisdiction was organized into six distinct segments (A through F) based broadly on the physical distinctions along the shoreline, the level of ecological functions provided by each segment, as well as existing land uses and zoning. Shoreline Planning Segments are described in the table below and shown on Figure 3-1.

Table 3-1. Shoreline Planning Segments.

Segment	*Approximate Length (feet)*	*General Boundaries*
A	1,656	Eastern Urban Growth Area (UGA) along Colvos Passage to the Gig Harbor spit
B	9,614	North of the Gig Harbor spit to North Harborview Drive NW/Rust Street Intersection
C	11,720	North Harborview Drive NW/Rust Street Intersection to Harborview Drive street end/Old Ferry Landing
D	13,092	Harborview Drive street end/Old Ferry Landing to southern UGA along the Narrows
E[1]	4,981	City limits and UGA along Henderson Bay from McCormick Creek to Goodnough Drive NW/Purdy Drive NW intersection (north of Goodnough Creek)
F[1]	5,611	Goodnough Drive NW/Purdy Drive NW intersection (north of Goodnough Creek) to northwestern UGA along Burley Lagoon

[1] With the exception of the city's shoreline frontage on Henderson Bay, all of Planning Segment E and all of Planning Segment F were removed from the Shoreline Master Program in response to public comment on the city's February 29, 2012 draft Shoreline Master Program.

Figure 3-1. Shoreline Planning Segments



3.1.2 Physical and Ecological Processes

The City's shoreline jurisdiction includes both steep, high, vegetated bluffs as well as sheltered 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 narrow sand and gravel beaches below. Sediment is transported along the beach in the predominant drift direction (or "net-shore" drift) by wind, waves, and currents. These shores are exposed to predominant southerly, and less common northerly, wind and wave conditions as well as strong currents through the Tacoma Narrows. The wave and current induced erosion likely enhances erosional processes throughout the Tacoma Narrows, and to a slightly lesser extent, Colvos Passage.

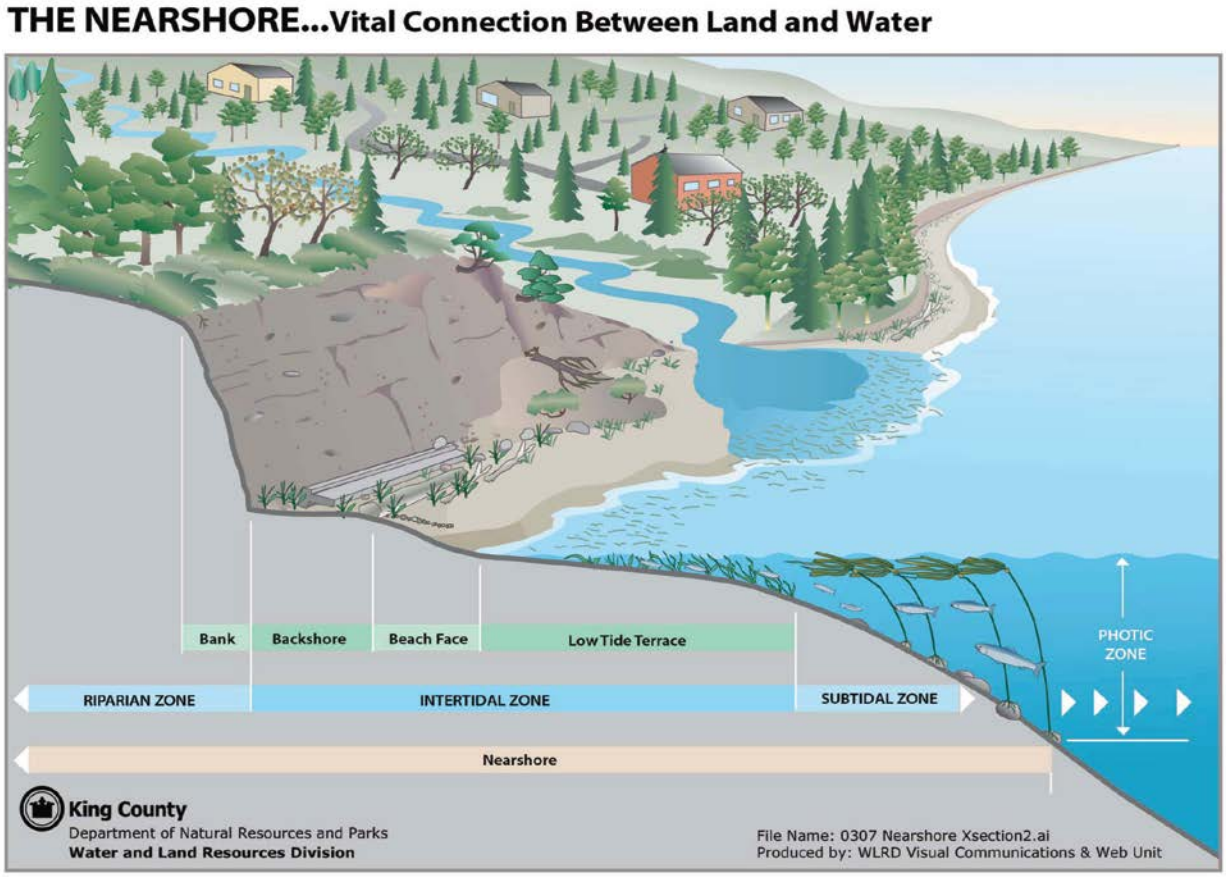
The shoreline inside Gig Harbor Bay is largely encompassed with the protected shores of the barrier fronted embayment. This area is also unique in that the protected banks are low- to moderate- height and characterized by considerably more dense development. This portion of the planning area also has minimal large woody debris (LWD) recruitment and very little marine riparian vegetation, relative to the other shores within the City's planning area. Shore modifications (piers, docks, marinas, and bulkheads) are abundant and largely preclude net shore-drift along the shores of Gig Harbor Bay. Inside the bay, the mouths of Donkey and Crescent Creeks form estuaries with associated wetland complexes.

The Henderson Bay / Burley Lagoon shorelines (in the northwest portion of the City and Urban Growth Area (UGA)) encompass the northern extent of a single, long net shore-drift cell that originates at Allen Point, south of the planning area. Up-drift feeder bluffs, located south of the planning 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, and associated estuarine wetlands are located in this area.

3.1.3 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 (see Figure 3-2 below).

Figure 3-2. Cross Section of the Puget Sound Nearshore



Graphic courtesy of King County Department of Natural Resources and Parks

A typical cross section of the Puget Sound nearshore extends from the top of the adjacent bluff to the limits of the photic zone (depth of light penetration in water, approximately 10 meters in Puget Sound).

Important features of Gig Harbor's nearshore that provide habitat include:

- Marine riparian zones (vegetated bluffs and vegetation overhanging the intertidal zone);
- Bluffs, beaches and backshore (sediment sources, substrate, and storm berms);
- Tidal flats (intertidal or shallow subtidal areas used by juvenile salmonids, shorebirds, and shellfish);
- Eelgrass beds and kelp forests (feeding and rearing habitat for wide variety of marine organisms);
- Tidal marsh and estuarine wetlands; and
- 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:

- Shellfish (clams, sea urchin, mussels, oysters, and crab);
- Salmonids (including listed species such as Chinook, steelhead, and bull trout);
- Forage fish (surf smelt, sand lance, and Pacific herring);
- Shorebirds and upland birds; and
- Marine mammals (killer whales, humpback whale, Steller sea lion).

3.1.4 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 associated net sheds; 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 small amounts of commercial near the SR 302 Bridge.

Water-dependent uses in Gig Harbor are concentrated in Gig Harbor Bay and include docks, piers, maritime heritage sites, boatyards and net sheds that support the commercial fishing industry; marinas that provide moorage for recreational vessels; and piers and docks that provide public access to the water. The City's waterfront contains 17 historic net shed structures, some of which are actively used for commercial fishing. Others have been adapted to other uses, including storage or office space for marinas and private residential uses.

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 and maritime heritage sites. 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. 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.

3.1.5 Shoreline Alterations

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. These modifications alter natural process dynamics, leading to beach narrowing, lowering, and decreased driftwood abundance. Shoreline armoring typically impedes sediment supply to down-drift beaches and nearshore habitats. The lack of sediment supply 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 and eelgrass meadows. Overwater structures deprive eelgrass of light. Shore armoring that infringes on intertidal areas can produce a groin-like effect, by impeding sediment transport along the shore 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. Bulkheads and piers also affect fish life by reducing the amount of shallow shorelines areas and diverting juvenile salmonids into deeper water, increasing their potential for predation.

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

3.2 Summary of Recommendations

3.2.1 Protection and Restoration of Shoreline Ecological Functions

Shoreline alterations in Gig Harbor's planning area have impaired ecological processes and functions. Areas of the shoreline where processes and functions are intact should be protected through development standards and regulations. This is the key concept behind the "no net loss" standard that is highlighted throughout the State's shoreline guidelines. Areas that have been impaired have potential for restoring shoreline ecological functions (such as habitat enhancement) through voluntary efforts or at the time of development or redevelopment.

Findings and recommendations related to the protection and restoration of shoreline functions have been identified in the Shoreline Inventory and Characterization Report (Appendix A) and the Shoreline Restoration Plan (Appendix B).

Key findings are summarized below:

1) The City of Gig Harbor's shorelines have been significantly 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.

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

3) Of the high priority opportunities for shoreline restoration: 1) protecting large wood debris and marine riparian vegetation requires 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.

4) 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.

Key recommendations addressed by the City and summarized below:

1) The City could explore developing a community education and incentive program to identify and develop restoration opportunities on private property which support the overall goals of this Master Program.

2) Standards for all overwater structures could be explored to increase light penetration to the water below. Options may include increasing the structure height over the water, modifying the structure orientation, minimizing the structure size, using grating as a surface material, placing floating docks in deeper water to avoid grounding during low tides, and considering the potential for carefully placed community docks.

3) For new shoreline stabilization projects, demonstration of the need for hard armoring approaches to shoreline stabilization could be required before approval. The use of alternative bank stabilization, and/or soft-shore armoring techniques could be encouraged in the City's shoreline master program.

4) Incentive programs could be put in place to encourage property owners to replace existing hard armoring with habitat-friendly erosion control structures or to remove existing structures when shore armoring is unnecessary.

5) Marine riparian zones of the City's shorelines should be protected and restored wherever possible. Several regulatory and non-regulatory approaches could be incorporated into the City's shoreline policies and regulations. Examples include requiring rear yard building setbacks to be measured from the bulkhead line or OHWM, rather than the rear property line which is often located waterward of the OHWM; providing landowners with on-site density transfers or off-site development rights transfers; requiring shoreline buffers to be protected by conservation easements; and providing technical assistance for restoration projects.

6) Policies and regulations for protection and restoration should be developed for areas currently outside of the City's control (i.e., the UGA; East Gig Harbor Bay; the Gig Harbor spit; and Henderson Bay/Burley Lagoon). This will most efficiently be accomplished through development of shoreline environment designations with Pierce County and pre-designating areas so that as areas are annexed, the City's shorelines are managed consistently through one SMP program.

3.2.2 Shoreline Use and Public Access

Findings and recommendations related to shoreline use and public access have been identified in the Shoreline Inventory and Characterization Report (Appendix A).

Key findings are summarized below:

1) The development of the SMP and shoreline environment designations are consistent with both the 2003 state shoreline guidelines (WAC 173-26) and the 2010 Comprehensive Plan. In order to meet shoreline management objectives as well as goals for historic preservation and waterfront design criteria, a unique shoreline environment designation for the downtown waterfront and historic district is warranted. The history and cultural heritage of Gig Harbor is tied closely to its settlement as a fishing village. As the commercial fishing fleet has declined in recent decades, over-water structures increasingly serve recreational boating and tourism. A potential use conflict exists between preservation of the City's last few parcels of working waterfront and state agency regulatory requirements for water-dependent uses.

Key recommendations addressed by the City and summarized below:

1) Incentives to maintain net sheds could be established to encourage adaptive re-use and preservation of these historic overwater structures. Adaptive re-use of water-oriented or non-water dependent uses could be allowed when combined with other SMA policy objectives, such as enhanced public access; education, historic and cultural preservation; and/ or restoration of degraded shoreline ecological functions.

2) Development of an "in-lieu fee" program to facilitate public access enhancements and shoreline recreational developments could be explored. This type of program would be utilized only after consideration of on-site public access opportunities at shoreline developments being proposed. Where on-site access would be infeasible, an in-lieu fee program may facilitate development of off-site enhancements identified as priorities through the SMP update and/or the City's Parks, Recreation, and Open Space Plan.

3) In order to minimize potential navigational conflicts, the City could explore defining and maintaining an open-water navigable channel where individual mooring buoys would not be allowed. Similarly, the City could examine the potential for increased "side-yard" setbacks from proposed docks or marinas that would provide moorage for pleasure-craft where those developments are adjacent to docks supporting commercial fishing operations or moorage of commercial fishing vessels.