



**DRAFT**

Restoration Plan

**City of Normandy Park  
Shoreline Master Program  
Update  
Normandy Park, Washington**

Prepared for  
**City of Normandy Park**

June 25, 2014  
12751-18





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Prepared by  
**Hart Crowser, Inc.**



# Contents

<b>INTRODUCTION</b>	<b>1</b>
Regulatory Background	1
Defining Restoration	2
Restoration Versus Protection	3
Key Elements of Restoration Planning in the SMP Update Process	4
<b>ECOLOGICAL ASSESSMENT OF SHORELINE FUNCTIONS</b>	<b>5</b>
Segment 1: Des Moines Beach	6
Segment 2: Marine View Park/Beaconsfield	7
Segment 3: Beaconsfield to Edgecliff	9
Segment 4: Edgecliff	10
Segment 5: Edgecliff to the North End of Cove	11
Segment 6: North City Limits	13
<b>RESTORATION GOALS AND POLICIES</b>	<b>13</b>
<b>EXISTING PLANS AND PROGRAMS</b>	<b>14</b>
Regional Programs	14
Puget Sound Partnership	14
Puget Sound Nearshore Project (PSNP)	15
Water Resource Inventory Area (WRIA) 9 Forum: Salmon Habitat Plan	16
Forterra	16
County and City Programs	17
King County Shoreline Master Program	17
City of Normandy Park Surface Water Management Division	17
<b>IMPLEMENTATION STRATEGIES, TARGETS, AND MONITORING METHODS</b>	<b>17</b>
Programmatic Conservation/Restoration	18
Existing Conservation/Restoration Activities	18
Additional Programmatic Conservation/Restoration Opportunities	18
WRIA 9 Habitat Planning	20
Site-Specific Restoration and Conservation	21
Segment 1	21
Segment 2	22
Segment 3	24
Segment 4	25
Segment 5	25
Segment 6	26

<b>Monitoring Methods</b>	<b>27</b>
Evaluation and Refinement of Individual Restoration Projects, Programs, and Priorities	27

**REFERENCES** **29**

**TABLES**

1 – City of Normandy Park’s Ecological Segments	5
2 – Summary of Restoration Goals and Objectives	
3 – Implementation Schedule and Potential Funding	27

**FIGURES**

1 – Mitigation versus Restoration in Shoreline Master Programs	4
2 – Potential Restoration/Preservation Opportunities	
3 – Unnamed Stream Constrained at Parcels 0722049036 and 0722049029	23
4 – Potential Beach Restoration on Parcel 0622049144 (left side) and Wetland Restoration on Parcel 0622049131 (right side)	25

**APPENDIX A**

**Map 12 – Ecological Segments Defined Along the Shoreline at Normandy Park**

## Restoration Plan

# City of Normandy Park Shoreline Master Program Update Normandy Park, Washington

## INTRODUCTION

The City of Normandy Park (City) was incorporated in 1953. The City is a beautiful waterfront community along the shores of Puget Sound (Sound) in King County (County) located approximately 12 miles south of Seattle. With approximately 6,500 residents and covering an area of about 2.5 square miles, the community places its highest priorities on maintaining and enhancing its quiet pedestrian-friendly setting and providing a healthy and safe environment in which residents can raise their families. The unique 3.5 miles of Puget Sound shoreline is one of Normandy Park's great assets and its residents are committed to keeping the shoreline beautiful and natural for all to enjoy. The City is bordered to the north by the City of Burien and to the south by the City of Des Moines.

This restoration plan supports the development of a restoration element to the City of Normandy Park's Shoreline Master Program (SMP), originally adopted in 1991. The SMP is being updated to comply with the Shoreline Master 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 specify that local governments must include within their shoreline master program a "real and meaningful" strategy to address restoration of shorelines. The guidelines also specify how the policies in the SMP should promote "restoration" of impaired shoreline ecological functions, in those places where such functions are found to have been impaired based on the inventory and characterization of shoreline ecological functions and ecosystem processes. Local governments are required to contribute to restoration by planning for and supporting restoration through the SMP and other regulatory and non-regulatory programs.

This restoration plan provides a framework to: (1) understand how restoration of ecological function can be accomplished; and (2) suggest pathways to use the SMP process to accomplish the restoration of impaired shoreline functions associated with the Puget Sound shoreline in Normandy Park.

## Regulatory Background

The restoration plan is an important component of the SMP process under the new guidelines. As such, local governments must develop provisions "...to achieve overall improvements in shoreline ecological functions over time when compared to the status upon adoption of the master program." It is important to note that the restoration planning component of the SMP is voluntary, not regulatory. Restoration planning is focused on incentives, available funding sources, volunteer programs, and other programs that can contribute to a no-net-loss strategy and an overall improvement of shoreline processes and functions.

To date, restoration, rehabilitation, enhancement or other improvements to shoreline ecological functions have either been voluntary or in the form of mitigation for impacts resulting from development. Conservation or preservation of existing conditions has been, and continues to be, the primary regulatory approach to protecting ecosystem functions:

*Through numerous references to and emphasis on the maintenance, protection, restoration, and preservation of “fragile” shoreline “natural resources,” “public health,” “the land and its vegetation and wildlife,” “the waters and their aquatic life,” “ecology,” and “environment,” the act makes protection of the shoreline environment an essential statewide policy goal consistent with the other policy goals of the act (WAC 173-26-186(8)).*

Current guidelines for updating local shoreline master programs add a planning and policy pathway to foster the improvement of ecosystem functioning as part of the overall shoreline master program. The guidance augments the typically reactionary approach (i.e., mitigation for environmental impacts) with a proactive approach wherein:

*For counties and cities containing any shorelines with impaired ecological functions, master programs shall include goals and policies that provide for restoration of such impaired ecological functions (WAC 173-26-186(8)(c)).*

The guidelines to prepare or amend shoreline master programs further state:

*The goal of this effort is master programs which include planning elements that, when implemented, serve to improve the overall condition of habitat and resources within the shoreline area of each city and county (WAC 173-26-201(c)).*

## 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 with 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 beach nourishment projects 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). The restoration planning element required therefore focuses on the City as a whole, rather than parcel by parcel, or permit by permit.

## Restoration Versus Protection

Restoration is different from protection. For shorelines, the latter is achieved primarily through the SMP policies and regulations (as well as other City, state, and federal regulations) that safeguard resources from damage caused by use and development. Protection requires that development be prohibited in some areas. Where development is allowed, it generally must occur in a way that mitigates adverse effects on the natural environment such that the net result of the development activity is no worse than the pre-development condition. Protection also requires that deliberate measures be taken to ensure that natural ecosystem processes (such as shoreline drift, coastal bluff and fluvial inputs, sediment delivery, and hydrology) be maintained.

Restoration, on the other hand, involves more than simply following and enforcing existing rules or maintaining existing conditions. It requires taking active steps to improve the condition of existing resources and ecological processes that have been lost or impaired over time. Restoration measures are intended to supplement shoreline protection efforts such that environmental conditions improve over time (Figure1).

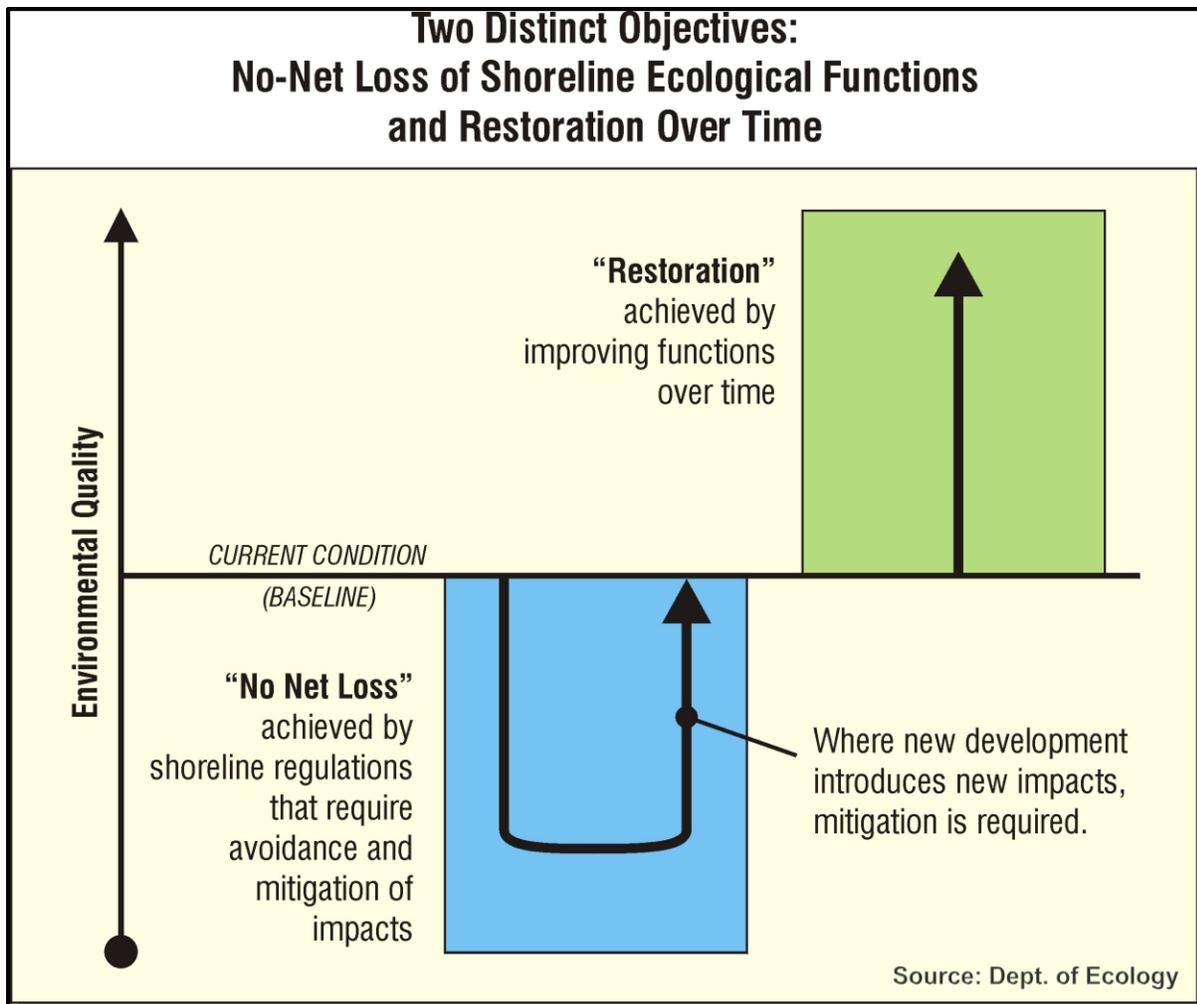


Figure 1 – Mitigation versus Restoration in Shoreline Master Programs

## Key Elements of Restoration Planning in the SMP Update Process

The guidelines provide a framework for shoreline restoration planning as part of a local jurisdiction’s shoreline master program. This framework (WAC 173-26-201(2)(f)) includes the following key elements:

- (i) Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration;*
- (ii) Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions;*
- (iii) Identify existing and ongoing projects and programs that are currently being implemented, or are reasonably assured of being implemented (based on an evaluation of funding likely in the foreseeable future), which are designed to contribute to local restoration goals;*

- (iv) Identify additional projects and programs needed to achieve local restoration goals, and implementation strategies including identifying prospective funding sources for those projects and programs;
- (v) Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals;
- (vi) 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.

## ECOLOGICAL ASSESSMENT OF SHORELINE FUNCTIONS

Shoreline restoration planning begins with the identification of “degraded areas” or areas with “impaired ecological functions.” The City’s Shoreline Inventory and Characterization study (King County, 2011) examined nearshore and ecosystem-wide processes that maintain shoreline ecological functions; identified impaired ecological functions; and identified programmatic and site-specific opportunities for restoration and/or enhancement. Key findings of the study are summarized below.

There are six ecological segments that were identified along the shoreline through the Inventory and Characterization Report (King County 2011). The shoreline jurisdiction of the City was broken into 6 segments using zoning, land use patterns, habitat type, and geologic data. A general description, including extent, is included in Table 1 and shown on Map 12 (Appendix A) that was excerpted directly from the Inventory and Characterization Report (King County 2011).

**Table 1 – City of Normandy Park’s Ecological Segments**

Segment Name	Segment Number	Length (ft)	General Description
Des Moines Beach	1	1,487	This reach extends north from the City’s southern boundary with Des Moines to the last house that was built on the beach.
Marine View Park/Beaconsfield	2	5,745	This reach extends north from Reach 1 to end of R15 zoning.
Beaconsfield to Edgecliff	3	2,140	This reach contains mostly low bank accretionary shoreline and begins the R20 zoning that extends north through the rest of the City.
Edgecliff	4	3,540	This reach contains high bank shoreline, vegetated slopes, with houses at the top of the bluff.
Edgecliff to north end of the Cove	5	4,693	This reach is mostly low bank shoreline with houses located within 100 feet of a mostly bulkheaded shore.
North End of the Cove to North City Limits	6	764	This reach extends from the Cove at the north end of the mouth of Miller/Walker Creek to the northern boundary of the City with Burien.
	Total	18,369	

The following briefly summarizes the overall health of ecological functions within each of the analysis segments of the City's shoreline jurisdiction. The degraded areas, areas that have potential for restoration, and areas with higher levels of shoreline function that should be conserved are identified within each segment, as appropriate. This information provides a baseline of the ecological condition of the shoreline in Normandy Park.

## Segment 1: Des Moines Beach

Segment 1 is the only reach that contains a portion of drift cell Ki-8-2 that extends north from Des Moines. Segment 1 was defined primarily by a dense cluster of houses that are located mostly on the beach, backed by a bluff with houses overhead. Given the uniqueness of this combination of development patterns, this segment was broken out into its own reach.

This segment has been completely bulkheaded except for one parcel which has not been developed. The bulkhead types are a mix of riprap and cement walls. Since the entire segment is armored, there are no other current shore types present other than "modified" (Johannessen et al. 2005). Recent mapping classifying the historic nature of the shoreline showed that the majority of the segment was mapped as being an exceptional feeder bluff, with a small area mapped as feeder bluff. This indicates that this area used to provide sediment to the drift cell. Note that the southern 100 feet of this segment currently would supply sediment to the south under current conditions of the marina creating the wave shadow. Much of the armoring in this segment was classified as being located below the ordinary high water mark (OHWM) (Anchor 2006). As noted above, the deeper into the intertidal the armoring goes, the bigger impact and more spread out through the ecosystem the armoring impacts occur. This segment did not have any groins built to catch sediment; however, given that many of the bulkheads extend into the intertidal, many of the bulkheads act as groins, intercepting sediment moving along the shore. One boat ramp was observed within this segment. There are no known overwater structures or tidal barriers in this segment. Given the very close proximity of the houses in this reach to the water, there is a greater potential for artificial light pollution of the nearshore waters at night in this segment than most of the others within the City.

Previous forage fish surveys in this reach have not found any sand lance or surf smelt spawning on the beaches, however only one survey has been done in this reach (WDFW 2010) (Map 16 in Inventory and Characterization Report). Surveys of submerged aquatic vegetation in the 1990s showed that there are no known kelp beds in Segment 1 (Berry et al. 2000). However, Department of Agriculture maps from 1911–1912 indicate that kelp may have been more prevalent along the shore in King County than it is now (Thom and Hallum 1990). Surveys in the 1990s showed that eelgrass is found in patchy beds throughout the segment (Berry et al. 2000). Washington Department of Fish and Wildlife (WDFW) shellfish data indicate that hardshell clams can be found close to shore throughout this reach and that geoducks can be found in a parallel band between 700 and 2,000 feet offshore (WDFW 2010).

The marine riparian area has been heavily modified by the development that has occurred over the last 100 years. The trees that are present are limited to the area between the houses at the toe of the bluff and the houses at the top of the bluff, thus providing only a few of the potential benefits of vegetated buffers. The primary benefit the vegetation is providing is slope stabilization. However, it

was observed that the trees along the top of the bluff slope have been thinned or removed throughout much of the segment. Also, most of the trees at the top of the bluff are gone and replaced with lawns. This was most likely done in order to provide unobstructed views of Puget Sound, but it is likely this has increased slope instability for the tall bluffs just above the houses on the shore. Given that nearly the entire reach has been bulkheaded and that most of the bulkheads are well below the ordinary high water line, there are no accumulations of drift logs on the beach. Similarly, there is also no ability for large woody debris (LWD) to accumulate and overhang the intertidal.

One of the primary means of accessing the houses is driving along the beach. Driving along the beach has the potential to cause variety kinds of damage to the beach. Any benthic or epibenthic organisms on the upper beach are likely to be crushed by vehicles. This includes any forage fish that might be spawning on the beaches. It is not known if residents drive along the lower intertidal areas during low tides; if so, there is the potential for heavy damage to any eelgrass patches present. Cars driving on the beach are also a source of consistent pollution through leaks of various car fluids (i.e., oil, antifreeze). The cumulative impacts of all the stressors on the ecology of this segment of shoreline are potentially fairly high.

## **Segment 2: Marine View Park/Beaconsfield**

This mile-long reach includes mostly steep bluffs throughout the segment, with about 600 feet of low bank shoreline in the northern portion of the segment. The development pattern in this segment is fairly different from Segment 1 due the fact that the generally straight shoreline bluff has been interrupted by multiple reentrants created by localized surface and groundwater discharge. Since the bluff face undulates greatly in this segment, most of the development at the top of the bluff was set back much farther from shoreline than in Segment 1. In Segment 2, the top of the bluff is generally much greater than 300 horizontal feet away from the OHWM, in comparison to Segment 1, where it is generally less than 200 feet. There are 52 shoreline parcels in this reach. Only seven of these parcels have houses within 200 feet of the shoreline, and there are 34 vacant parcels. Two of the houses are located on the shore, at the toe of bluff, and are located fairly close to Segment 1. Unlike the houses in Segment 1, these two houses have upland access via a road cutting across a steep slope. Many of the vacant parcels are found in the Beaconsfield area and are very narrow, some only 20 feet wide, and contain only steep slopes. This segment also includes Marine View Park, which is the only physical public access point to shore for residents of the City.

Bulkheads cover approximately 50 percent of the shore. Other shoretypes present include a modified accretion shoreform, a few hundred feet of transport zone, and roughly half a mile of active feeder bluff (Johannessen et al. 2005). Recent mapping classifying the historic nature of the shoreline showed that the majority (47 percent) of the armored area was mapped as being an exceptional feeder bluff, with a smaller area (30 percent) mapped as feeder bluff. This indicates that this area used to provide a significant amount of sediment to the drift cell. The accretion areas located in this segment have a heavily modified backshore due to houses and clearing. The bulkhead types are a mix of riprap, old creosote pilings and cement walls. Much of the armoring in this segment was classified as being located below the OHWM (Anchor 2006). All of this information indicates that the physical impacts of the bulkheading in this reach are high.

This segment did not have any groins built to catch sediment; however, given that many of the bulkheads extend deep into the intertidal, many of the bulkheads act as groins, intercepting sediment moving along the shore. There are three mapped boat ramps in this segment. Two of the ramps are quite extensive, with one extending 110 waterward of the OHWM and the other extending 65 feet out. There are no known overwater structures or tidal barriers in this segment. Given the highly vegetated slopes and the general lack of proximity of houses in this reach to the water, there is a very low potential for artificial light pollution at night in this segment.

There are at least two small stream mouths that are highly visible in most aerial and oblique photographs. The southerly stream mouth is highly constrained due to being located between the two houses that are located on the beach. The two houses and their bulkheads create a roughly 60-foot-long by 10-foot-wide flume. Given the steepness of the hillside, it is unlikely that this stream could provide salmonid spawning habitat, but the stream mouth would provide rearing habitat. The other stream is located between Marine View Park and the Beaconsfield development and appears to have mostly a natural outlet. A survey done in 2003 of an upstream segment classified the water type as perennial with no fish (Washington Trout 2004).

Previous surveys in this reach have not found any sand lance or surf smelt spawning on the beaches (WDFW 2010). Given that some of the beaches in this segment could support surf smelt and sand lance (i.e., have appropriate physical space and appropriate substrate), it is unclear why they are currently not spawning in this segment. Surveys of submerged aquatic vegetation in 1990s the showed that there are no known kelp beds in Segment 2 (Berry et al. 2000). The same surveys showed that eelgrass is found in patchy beds throughout the segment.

WDFW shellfish data indicate that hardshell clams can be found close to shore in the southern portion of this segment and that geoducks can be found in a band parallel to shore more than 700 feet offshore (WDFW 2010). It should also be noted that the two large boat ramps in this segment extend fairly deep into the water and appear to be cement structures that would preclude most naturally occurring subtidal organisms (i.e., various clams).

The marine riparian area in this segment is probably the most intact within the City. Trees make up slightly over 90 percent of the shoreline vegetation. While the trees are a fairly even mix of dense and patchy stands, most of the trees do not overhang the intertidal. The lack of overhanging vegetation is created by a combination of natural steep bluffs along the shore and shoreline armoring that interrupts the ability of the trees to overhang the intertidal. Given the fairly broad area covered by steep slopes, this area is one of the more heavily treed areas in the City. Similar to Segment 1, many of the trees at the top of the bluff have been replaced with lawns.

There are no mapped areas of LWD, likely for the same reasons noted above for the general lack of overhanging trees. However, there are significant areas (approximately 60 percent of the segment) of drift log accumulations. The areas of the segment that do not have drift logs are generally bulkheaded below the OHWM, providing no ability for the logs to accumulate.

### Segment 3: Beaconsfield to Edgecliff

This 2,000-foot-long segment's geomorphology is fairly similar to Segment 2. This segment includes mostly low bank shoreline that is at the base of one of the areas that the bluff has substantially eroded inland due to localized surface and groundwater discharge. There is one short area (approximately 400 feet) of bluff in the middle of the segment which is fairly stable due to beach in front of it being accretionary. Although the bluff face undulates greatly in this segment, there were more substantial flat areas near the toe of slope where development of sizable houses has occurred. There are 10 shoreline parcels in this reach. Four of these parcels have houses within 200 feet of the shoreline, though it looks like another house was being rebuilt within 200 feet of the shoreline in 2009 aerial photographs. The houses are between 25 and 50 feet from the OHWM. There is only one vacant parcel. This is the only segment within the City that has a private road along the beach. The road is about 500 feet long and the waterward edge is located at about the OHWM. This segment is also one of the only segments with a coastal wetland.

The entire segment is mapped as an accretion shoreform, but almost 45 percent of it has been heavily modified by clearing, bulkheads, and a road (Johannessen et al. 2005). The bulkhead types are a mix of riprap and cement walls. The armoring in this segment was classified as being located at or above OHWM (Anchor 2006). This generally indicates the impacts of these bulkheads is less on the actual beach environment, but the upland portion of the segment has been heavily modified by the development. This segment does not have any groins or overwater structures and none were previously mapped (Anchor 2006). One parcel has a boat ramp that automatically surfaces when needed for use, otherwise it remains below the beach, so its impact on the shoreline is much reduced compared to an above-ground boat ramp. Given the general close proximity of houses in this reach to the water in the northern half and the most southern portion, there is a moderate potential for artificial light pollution at night in this segment.

There are at least two small streams that are highly visible in most aerial and oblique photographs and were mapped in 2004 by Washington Trout. The southerly stream flows into the mapped wetland in this reach. The wetland is roughly three acres in size and appears to be isolated from the marine environment by a private road that runs along the shore. Given the generally low-lying beach face, it appears that under natural circumstances there would be a connection to the Sound, creating a salt marsh versus a freshwater-dominated marsh. The northerly stream is highly constrained due to being located in a cement flume. This stream was classified by Washington Trout (2004) as being perennial without fish. It is unclear how much habitat would be opened up if the flume barrier were made passable, but given the steepness of the hillside, it is unlikely that this stream could provide salmonid spawning habitat. Washington Trout (2004) noted that the landowner said there was a salt marsh at the mouth 50 years ago before the houses were built on top of the marsh. If the mouth was restored, or at least the flume made more passable, it is likely that the area would be used by rearing salmonids.

Previous surveys in this reach found surf smelt spawning on the beaches, but no sand lance (WDFW 2010). Surveys of submerged aquatic vegetation in 1990s showed that eelgrass is found in patchy beds throughout the segment, with a continuous band of eelgrass in the northern 300 feet of the segment

(Berry et al. 2000). WDFW shellfish data indicate geoducks can be found in a band parallel to shore more than 700 feet offshore (WDFW 2010).

The marine riparian area in this segment is some of the least intact within the City. Trees make up slightly over 22 percent of the shoreline vegetation. This single dense patch of trees does not overhang the intertidal, though it does extend up the slope and onto the plateau above. The rest of the vegetation in this segment is made up of lawns and landscaping. Given the accretionary nature of this shoreline and that bulkheads were mostly built above the OHWM, there are drift log accumulations throughout the segment. However, given the lack of trees along the shore, there are no mapped areas of potential LWD accumulation.

## Segment 4: Edgecliff

This 3,500-foot-long segment's geomorphology is much more similar to Segment 1 than to Segments 2 and 3. The shoreline is typified by a vegetated, fairly steep, uniform bluff with no houses at the toe of slope. The bluff height starts at around 250 feet in the southern end and slowly transitions to a 50-foot-tall bluff at the northern most end. There are 33 shoreline parcels in this reach, with one vacant parcel. Only four of these parcels have houses within 200 feet of the shoreline. Edgecliff Road is approximately 350 feet from shore and parallels the shore for most of the segment. There is generally a row of houses between the road and the slope of the bluff. The houses are set back from the edge of bluff on average 30 feet. This segment contains one historic house (the "Tracy House") that is located just outside of shoreline jurisdiction, while much of the property is located on the bluff face.

Most of the segment is mapped as either a feeder bluff or modified shoreline (Johannessen et al. 2005). Bulkheads are found along 54 percent of this segment. The bulkhead types are mostly low rock revetments and with some cement walls. The armoring in this segment was classified as mostly being located below OHWM (Anchor 2006). The bulkheads in this reach appear to have mostly been constructed to limit erosion of the toe of slope. One larger (approximately 350 feet) bulkhead was built fairly far into the intertidal and filled in behind the bulkhead in order to provide a level platform at the toe of the slope. Historical reconstruction of the armored sections indicates that they were previously acting as feeder bluffs (Johannessen et al. 2005). Given that the bulkheads are below OHWM and are blocking sediment from reaching the beach, they have a fairly significant impact on the nearshore environment. This segment had one groin mapped in the center of segment, but the groin appears to be falling apart and not effective. There are no boat ramps or overwater structures in this section, and none were mapped in 2005 (Anchor 2006). Given the general lack of proximity of houses in this reach to the water, there is a low potential for artificial light pollution at night in this segment.

Previous surveys in this reach found surf smelt spawning on the beach in the southern end of the segment, but no sand lance (WDFW 2010) (see Map 30 in the Inventory and Characterization Report [King County 2011]). Surveys in 1994 found surf smelt amounting to a total of 700 feet of this segment being mapped as spawning beach. Surveys of submerged aquatic vegetation in 1990s showed that there are no known kelp beds in Segment 4 (Berry et al. 2000). The same surveys showed that eelgrass

is found as a continuous band throughout the whole segment. WDFW shellfish data indicate geoducks can be found in a band parallel to shore more than 1,000 feet offshore (WDFW 2010).

The marine riparian area in this segment is some of the most intact within the City. Trees are found along the entire length of shoreline, though approximately 65 percent of the trees are patchy. Overhanging trees make up slightly over 73 percent of the shoreline, with much of overhanging vegetation being patchy in nature. Much of the vegetated area thins out as it gets to the top of the bluff, especially in the northern section of the segment. This is likely for views of Puget Sound, but the lack of trees and predominance of shrubs will likely affect the slope stability over the long term. There is one small area (approximately 200 feet) of LWD mapped in the southern portion of the segment. There are drift log accumulations in the southern and northern sections of the segment.

### **Segment 5: Edgecliff to the North End of Cove**

This almost mile long segment's geomorphology is fairly different than the other segments to the south. This segment includes mostly low bank shoreline that gently slopes towards Puget Sound and is likely part of a remnant glacial outwash channel (Booth and Waldron 2004). Given the gentle slope, the area is also highly built out by residential land use. There are 32 shoreline parcels in this reach. Twenty-eight of the parcels have houses within 200 feet of the shoreline. Most of the houses are set back 60 to 100 feet from the OHWM. There are several houses that are located less than 30 feet from the OHWM. This segment also contains three historic houses in the northern half. They are the "Hughett House," "Gustin House," and another unnamed house (King County 2010c cited in King County 2011). Normandy Terrace SW parallels the shore in this segment, with a small portion of the road being in shoreline jurisdiction. This segment is also one of the only segments with a coastal wetland. The northern end of this segment also has a fairly large stream delta that protrudes out into Puget Sound 1,000 feet or more. The Southwest Suburban Sewer District has a direct outfall offshore of the delta. This outfall may be responsible for some of the unusual water quality data noted in the Inventory and Characterization Report.

The segment is mapped as a combination of accretion shoreforms and modified shorelines (Johannessen et al. 2005). Close to 50 percent of the shoreline has been bulkheaded (Anchor 2004). The bulkheading is concentrated in the residential area in the central and southern portions of the segment. Sixty percent of the armoring in this segment was classified as being below the OHWM (Anchor 2006). Combined this data indicates that the impact of these bulkheads is focused on the actual beach environment and backshore environments, and not on the sediment delivery functions. This segment has five groins throughout the segment. Most appear to be old and failing, but one appears to be relatively new and larger (20 feet wide by 80 feet long) and is clearly trapping a fair amount of drift logs and sediment on the updrift side. The groin protects a City stormwater outfall. This groin is affecting sediment transport to other properties downdrift. Immediately downdrift of this groin is the remnant of a boulder field. There are at least 7 boat ramps in this reach, most of which are fairly short and do not extend far into the intertidal. There are two overwater structures in this reach. The first one is at the southern end of the segment and is roughly 5 feet wide by 50 feet long. The northern one connects a private residence on the right bank of Miller Creek at its mouth to the very end of the beach berm spit where a helipad was constructed. Given the general close proximity of

houses in this reach to the water in the southern and central portions, there is a moderate potential for artificial light pollution at night in this segment.

The three mapped streams in Normandy Park all outlet to Puget Sound in this segment. The southerly stream, Normandy Creek, is a fairly short stream that drains out of Nature Trails Park. While no fish were found during stream surveys in 2004, fish were believed to be present historically (Washington Trout 2004). The surveys were unable to classify if the piped outlet was a barrier to fish passage, but the habitat in the stream above the mouth was classified as having adequate spawning habitat. The outlet appears to be piped 80 feet waterward of the OHWM. This stream was most likely responsible for the historically mapped wooded marsh that was located at the mouth of this creek, but is not present today. The other two streams in this segment are Miller and Walker Creeks, which join together to a single stream channel just before the creek enters saltwater. Historically, both creeks fed into a nine-acre wetland complex (Collins and Sheikh 2005). Portions of that wetland still remain. Approximately 2.3 acres appears to be scrub shrub wetland. Most of this area is part of the private park, "The Cove." An enhancement project in the recent past created a large pond along the channel of Walker Creek. The pond has a dam on its outlet in order to control water levels, but does not block fish passage (Batcho, Andy, Normandy Park resident, personal communication, 2014). Salt water exchange reaches the pond at a tide of approximately 11 feet (Batcho, Andy, Normandy Park resident, personal communication, 2014). At least two acres of the former wetland area is currently managed as a lawn. In 2004, Washington Trout's surveys showed high numbers of both coho salmon and cutthroat trout in both streams and they still use the stream in high numbers (Batcho, Andy, Normandy Park resident, personal communication, 2014).

The entire Normandy Park shoreline is mapped as a coastal floodplain. The wetland area around the mouths of Miller and Walker Creeks is mostly mapped as floodplain.

Previous surveys in this reach did not find any surf smelt or sand lance spawning on the beaches (WDFW 2010). Given that some of the beaches in this segment could support surf smelt and sand lance (i.e., have appropriate physical space and appropriate substrate), it is unclear why they are currently not spawning in this segment. Surveys of submerged aquatic vegetation in 1990s showed that there are no known kelp beds in Segment 2 (Berry et al. 2000). The same surveys showed that eelgrass is found in patchy beds throughout the segment.

The marine riparian area in this segment is some of the least intact within the City. Landscaping and grass make up over 80 percent of the riparian vegetation of this segment. There are two patches of trees in the center of the segment totaling 564 feet and one small patch at the northern edge of the segment. A large portion of the trees come from a single parcel that contains one of the historic houses. Drift log accumulations were mapped in almost 70 percent of the segment, mostly in the central and northern portions. However, given the lack of trees along the shore, there are no mapped areas of potential LWD recruitment.

## Segment 6: North City Limits

This 750-foot-long segment's geomorphology is fairly similar to Segments 1 and 4. The shoreline is typified by a vegetated, fairly steep, uniform bluff with one house at the toe of the slope. The bluff height is about 100 feet throughout the segment. There are only six shoreline parcels in this reach, with two being vacant parcels. Portions of three houses are within the shoreline jurisdiction. One of these houses is built at the toe of the bluff and on the intertidal area. All of the segment is mapped as modified (Johannessen et al. 2005) and is bulkheaded. The bulkhead types are mostly low rock revetments and with some cement walls. The armoring in this segment was classified as mostly being located below the OHWM (Anchor 2006), though based on 2006 oblique photos, most of the armoring appears to actually be below the OHWM. Historical reconstruction of the armored sections indicates that they were probably acting as feeder bluffs (Johannessen et al. 2005). Given that the bulkheads are below the OHWM, and are blocking sediment from reaching the beach, they have a fairly significant impact on the nearshore environment. This segment had no groins, boat ramps, or overwater structures mapped within it (Anchor 2004). Given the general lack of proximity of houses in this reach to the water and the highly vegetated bluffs, there is a low potential for artificial light pollution at night in this segment. Most of the segment is mapped as having a 50-foot strip of coastal floodplain

Previous surveys in this reach found no surf smelt or sand lance spawning on the beach (WDFW 2010). Surveys of submerged aquatic vegetation in 1990s showed that there are no known kelp beds in Segment 2 (Berry et al. 2000). The same surveys showed that patchy eelgrass was found throughout the whole segment.

The marine riparian area in this segment is composed mostly of trees. Patchy trees are found along the entire length of shoreline, though approximately 15 percent of the trees separated from the shoreline by a house. There are no overhanging trees within this segment. Unlike many of the other segments, there is a fair amount of vegetation along the top of the bluff. Given the shoreline armoring of the whole segment, no LWD was mapped in the segment. There is a very small area of drift log accumulations in the southern most edge of the segment (Anchor 2004).

## RESTORATION GOALS AND POLICIES

The guidelines provide that local shoreline master programs shall include "goals, policies and actions for restoration of impaired shoreline ecological functions." Under the guidelines, restoration planning has a purpose distinct from development regulations and mitigation standards. "The guidelines expressly focus restoration requirements on the use of master program policies, as opposed to development regulations" (Ecology 2004). "Master program provisions should be designed to achieve overall improvements in shoreline ecological functions over time, when compared to the status upon adoption of the master program" (WAC 173-26-201(2)(f)).

Table 2 outlines the goals and objectives identified for the City of Normandy Park's restoration strategy based on the opportunities identified in the Inventory and Characterization Report. The shoreline goals and objectives provide the foundation and framework on which the balance of the master program has been developed. Citizens, administration, and governmental officials of the City

have established the goals and associated objectives which reflect the level of achievement believed to be desirable for all City shoreline uses, needs, and developments. In addition to the goals and objectives, Table 2 also identifies performance measures that can be used to evaluate objective success as well as shoreline functions that will be improved by the objective.

## 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 that could be used by Normandy Park. At the end of this section, an assessment of the need for any additional programs is offered. These plans and programs include both regional and local (county and city) plans and programs. 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.

### Regional Programs

The following regional programs are in place with the overall goal to restore Puget Sound marine shorelines and salmonid habitat.

#### ***Puget Sound Partnership***

In December 2005, Governor Gregoire formed the Puget Sound Partnership to focus attention on the overall needs and health of Puget Sound and to promote public education and interagency coordination for cleanup of the Sound. The vision of the Partnership is:

*To ensure that the Puget Sound forever will be a thriving natural system, with clean marine and freshwaters, healthy and abundant native species, natural shorelines and places for public enjoyment, and a vibrant economy that prospers in productive harmony with a healthy Sound.*

At the direction of the Governor, the Puget Sound Partnership drafted an Action Agenda for preserving and restoring Puget Sound and its species and habitats by the year 2020. On December 1, 2008, the Partnership adopted its Action Agenda and has since updated the agenda in 2012–2013. The Agenda identifies the following priority strategies for restoring the upland and marine and nearshore habitats in the Sound.

PSP has formed Local Integrating Organizations (LIOs) in seven geographic actions areas covering the entire region around the Sound. Normandy Park falls in the South Central Puget Sound action area. The South Central Action Area Caucus Group was formed for the South Central LIO and has identified the following four priority issues for that area:

- Land development;
- Shoreline alteration;

- Stormwater; and
- Loss of floodplain function.

The South Central Action Area Caucus Group identified ten priority strategies, as listed below (in alphabetical order). The ten priority strategies were honed from a more comprehensive list of strategies that were all considered important in addressing the local pressures.

1. Acquire or protect high-value habitat and land at immediate risk of conversion.
2. Change Shoreline Management Act (SMA) statutes and regulations to limit residential shoreline armoring and overwater coverage, and promote “green” shoreline replacements.
3. Develop a strategic funding proposal for habitat restoration and protection priorities.
4. Fund and implement stormwater retrofits, improvements to operations/maintenance of existing stormwater infrastructure, and additional source control measures.
5. Implement salmon recovery habitat protection and restoration recommendations.
6. Incorporate low impact development (LID) requirements into stormwater codes and develop and implement LID incentives.
7. Keep toxics and excess nutrients out of stormwater runoff and wastewater.
8. Restore floodplains to recreate ecosystem function.
9. Restore and protect Local Toxics Control Account funding under the Model Toxics Control Account (MTCA) for local toxics cleanup activities.
10. Work with local governments to develop and implement policies and regulations that advance Action Agenda implementation.

The City of Normandy Park and other local governments play a vital role in protecting water quality and habitat within their jurisdictions through updates to their SMPs and stormwater plans. Updates should be consistent with the goals of the PSP Action Agenda for the South Central action area. Normandy Park may also be able to obtain funding for shoreline restoration activities and education through sources identified by PSP and participation in the South Central Area Caucus Group..

### ***Puget Sound Nearshore Project (PSNP)***

The Puget Sound Nearshore Project (PSNP) (also referred to as 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. PSNP represents a partnership between the US Army Corps of Engineers (USACE), state and federal government organizations, Indian tribes, industries and environmental organizations.

A study conducted by PSNERP (Fresh et al. 2011) 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 (Fresh et al. 2011).

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

### ***Water Resource Inventory Area (WRIA) 9 Forum: Salmon Habitat Plan***

The City is a participating local agency in WRIA 9 watershed planning. After several years of planning and scientific study, WRIA 9 completed the Salmon Habitat Plan (WRIA 9 2005). The plan is both broad in scope and specific in recommendations for protection, enhancement, and restoration of habitat of Puget Sound coastal shorelines in the WRIA 9 area. The plan identifies needs and includes recommended policies, programs, and projects for both the entire Green/Duwamish watershed and the sub watersheds (Miller and Walker Creek basin) within the City of Normandy Park. WRIA 9 planning efforts and King County Conservation District assisted Normandy Park with the Miller and Walker Creek Basin Plan in 2006.

The 3 overarching goals of the WRIA 9 Salmon Habitat Plan that are highly pertinent to the City's Restoration Plan and SMP include:

1. Revegetation of the shoreline is a high priority throughout the WRIA. Specifically, the plan states, "Protecting and improving riparian conditions by adding native riparian vegetation will enhance habitat quality by improving water quality, stabilizing streambanks, providing overhanging vegetation and LWD, and contributing organic matter, nutrients, and terrestrial prey items, thereby leading to greater juvenile salmon growth and higher survival."
2. The plan highlights the need to not allow any new shoreline armoring or intertidal fill and the need to reduce the amount of existing shoreline armoring and intertidal fill. Specifically, the plan states, "Preventing new bank/shoreline armoring and fill and removing existing armoring, fill and other impediments (e.g., levees) will enhance habitat quality and quantity and lead to improved juvenile salmon survival, spatial distribution, and diversity."
3. The plan also highlights the need for improved shallow water habitat, which is related to fill and other structures below the historic OHWM. Specifically, the plan states, "Protecting and increasing the availability of vegetated shallow nearshore and marsh habitats will enhance habitat quantity and quality and lead to greater juvenile salmon residence time, greater growth, and higher survival."

### ***Forterra***

Forterra (formerly The Cascade Land Conservancy) seeks to conserve urban and rural natural spaces within the Central Puget Sound region, including areas throughout King and Pierce Counties. Priority natural areas include lands along streams, rivers, other areas in the cascade foothills, and estuary areas. The Forterra conservation strategies have included securing lands through purchase and

donation, conservation easements, and ownership agreements. Since 1989, the Forterra has completed 139 projects that have conserved a total 117,783 acres (85 percent in King County). Although no Forterra protected lands currently exist within the City of Normandy Park, the shoreline landscapes may provide conservation opportunities for Forterra. Forterra is working with the City on conservation and restoration of the Beaconsfield properties which is further discussed under the *Site-Specific Restoration and Conservation* section.

### **County and City Programs**

The following county- or city-wide programs are in place, which provide guidance for lakeshore restoration and/or restoration within the marine shoreline.

#### **King County Shoreline Master Program**

King County is updating its Shoreline Master Program concurrent with the cities in the County. The County has completed its shoreline inventory and characterization, which addresses ecological functions of shorelines within Normandy Park. In 2007, King County also developed its restoration plan for shorelines within unincorporated County lands. The King County Shoreline Restoration Plan does not identify any site specific restoration projects on the City's shorelines. The City should, however, coordinate efforts with King County for restoration opportunities identified for its shorelines, as well as for regional collaboration in restoration within WRIA 9.

#### **City of Normandy Park Surface Water Management Division**

The City's Surface Water Management Program has recently been updated and is guided by the Stormwater Management Plan (2013). The Surface Water Management Division (SWM) is responsible for the comprehensive management of the City's surface water systems. This involves protecting developed and undeveloped properties from flooding, runoff and water quality problems, while continuing to accommodate new development. The SWM Division also promotes the preservation of natural drainage systems, and protection of fishery resources and wildlife habitat. The City's Surface Water Capital Improvement Program identifies, funds, and implements site-specific projects intended to provide flood control or alleviation, improve and enhance riparian habitat, replace culverts to improve fish passage, and improve water quality from stormwater runoff. SWM plans to implement Low Impact Development measures and green infrastructure where possible throughout the City. The SWM Program's conservation/restoration efforts have been primarily focused on stream resources, with limited emphasis on restoration of marine shorelines.

## **IMPLEMENTATION STRATEGIES, TARGETS, AND MONITORING METHODS**

This section is intended to provide information about the implementation approach that will be used by the City, consistent with guidance for SMP development (WAC 173-26-201(2)(f)(vi)).

In Normandy Park, both programmatic and site-specific opportunities for continued shoreline protection and conservation exist. Opportunities have been identified by regional plans as described above (e.g., WRIA 9 Salmon Habitat Plan and related studies) and the City's Shoreline Inventory and

Characterization (prepared by King County [2011]). The City's residents have and continue to be good stewards of their shorelines, as evident by the restrictions to shoreline development in the 1991 SMP and their commitment to shoreline protection and restoration. Many of the City's residents have voluntarily protected and restored their shorelines and these volunteer activities are the backbone of this Restoration Plan. This section of the Restoration Plan describes on-going shoreline protection and restoration activities, identifies additional potential opportunities for shoreline restoration activities, and outlines the City's approach to undertaking both programmatic and project specific measures to continue shoreline restoration and conservation within the City.

Conservation of shorelines is also included in this restoration plan. Conservation refers to preserving existing shoreline areas that currently provide valuable functions. An important part of any good habitat protection plan is protecting priority ecological processes and habitats that have not been degraded or impaired. Conservation opportunities in the City's shoreline are primarily provided through WRIA 9 studies and are intermixed with restoration opportunities for marine shorelines. Conservation of shorelines will also be addressed in the City's shoreline regulations.

## **Programmatic Conservation/Restoration**

### ***Existing Conservation/Restoration Activities***

The City of Normandy Park residents care deeply about the protection, conservation, and continued restoration of their shorelines. The following activities have been undertaken voluntarily by the residents of the City of Normandy Park; many of the activities are ongoing.

- Citizens of Normandy Park, with assistance from public grants, have completed extensive restoration of the shoreline, wetlands, and stream habitat at the mouths of Walker and Miller Creeks located in the northern tip of the Normandy Park shoreline. Wetlands and stream habitat in Normandy Park are included in the shoreline protection zone regulated by the SMP. Restoration activities continue to occur in this area.
- Residents have worked with King County Conservation District technical assistants to remove non-native vegetation and replant native vegetation and to revegetate bare areas along their shoreline properties.
- Residents have protected large portions of the feeder bluffs along the shoreline by restricting development at the base of the feeder bluffs.
- Residents continue to educate themselves on the importance of shoreline protection and restoration and the benefits for fish and wildlife and the residents of the City.

### ***Additional Programmatic Conservation/Restoration Opportunities***

There are a variety of voluntary programmatic actions that the City could undertake throughout the City as new development or redevelopment proposals come in. These opportunities are listed below. The City could also institute a restoration program that would educate the public, obtain grant funding, and monitor and track restoration actions.

- Protect and preserve functioning feeder bluffs.
- Protect existing LWD and drift log accumulations on the beach.
- Severely limit the circumstance where new bulkheads could be created in areas that currently do not have any.
- Promote the use of shoreline setbacks for all new construction.
- Remove shoreline armoring wherever possible, especially in areas that were historically feeder bluffs. If shoreline armoring needs to be replaced, consider requiring that soft-shore armoring options be exhausted before allowing a standard rock revetment. If replacement rock revetment is allowed, move the revetment back so that it is located above the OHWM.
- While this has been done by residents, a more comprehensive approach to revegetating as much of the shoreline as possible could be implemented. This is especially important in the bluff areas. There are areas throughout the City where the vegetation at the top of the bluffs has been removed for views. There are many ways to plant and prune trees that still allow for views of Puget Sound. This could help to better stabilize bluffs, which is especially important in areas where houses are located very close to the bluff edge or at the bottom of the bluff.
- Restore tributary stream mouths for potential salmonid use, possibly allowing restoration of wetland habitats that are rare in central Puget Sound.
- Restore coastal wetland areas at locations other than at the mouths of Miller and Walker Creeks whenever possible.
- Remove abandoned, human-made structures (i.e., failing docks, creosote pilings, and creosote debris on the beach).
- Create a more formalized education program for shoreline landowners on the importance of the nearshore environment and on safety related to the various hazards of living on the shore.
- Collaborate with Beach Watchers and WDFW to conduct a forage fish sampling program within suitable beach habitat to better determine areas for protection and restoration.
- Continue to promote removal of subsurface oil tanks.
- Review the possibility and benefits of extending the wastewater treatment outfalls deeper into Puget Sound.
- Encourage sewage districts (Southwest Suburban Sewer District and Midway Sewer District) to upgrade to tertiary treatment at their plants.

Other programs and funding sources for shoreline restoration that could be undertaken by the City are described below.

### **Coastal Protection Fund**

The Washington State Legislature created the Coastal Protection Fund (CPF) as a non-appropriated revolving fund to pay for projects that:

- Restore or enhance environmental, recreational, archaeological, or aesthetic resources for the benefit of Washington’s citizens;
- Investigate the long-term effects of oil spills; and/or
- Develop and implement aquatic land geographic information systems.

Payments from penalties issued for water quality violations of the Water Pollution Control Act are deposited into a CPF sub-account called the Terry Husseman Account (THA). The account’s purpose is to honor the past contributions and successes of Mr. Husseman in the field of environmental management. Grants from the THA are issued to eligible entities to support locally sponsored projects to restore or enhance the natural environment. Typical projects address water quality issues and fish and wildlife habitat protection or enhancement related needs. Eligible entities include:

- Washington counties, cities, municipalities and other state agencies;
- Other state-recognized local governments (ports, public utility districts [PUDs], special purpose districts); and
- Federally recognized tribal nations or entities in Washington State.

Private entities and not-for profit organizations are not eligible for THA funds. However, they may partner with eligible entities to leverage other funding or add to a project’s total resource needs. Project proposals are normally requested one to two times per year from each of the Washington State Department of Ecology’s (Ecology) four Regional Offices. Awards for successful proposals vary and are capped at \$50,000 per project.

### **Puget Sound Restoration Fund**

Puget Sound Restoration Fund (PSRF) is a Washington-based nonprofit organization. Founded in 1997, PSRF is dedicated exclusively to restoring marine habitat, water quality and native species in Puget Sound. Working collaboratively with industry, tribes, government agencies, private landowners and community groups, PSRF takes a non-activist, project-oriented approach to restoration. The mission of the Puget Sound Restoration is to achieve on-the-ground restoration of habitat, water quality and native species in Puget Sound by focusing on action not politics. Their goal is to mobilize funding and support from diverse sources to complete priority projects. The PSRF has supported a wide variety of restoration projects, many of which target enhancement of shellfish habitat and populations, as well as broader shoreline habitat restoration.

### ***WRIA 9 Habitat Planning***

The WRIA 9 Salmon Habitat Plan recommends development of several programs relevant to the City of Normandy Park shoreline master program update. The programs will be developed by King County in coordination with local jurisdictions and could be implemented at the local level by the County or by the City. WRIA 9 encourages the City to develop programs such as those listed below and consider others that would promote the goals of the WRIA 9 Salmon Habitat Plan (described above). The City will continue to support and participate in the development of these programs, which will be

administered by the City's new or expanded shoreline restoration program. The programs under consideration are:

**1. Promote Habitat Restoration on Private Property by Offering a Blueprint of Nearshore Habitat Project Designs.** This program would promote voluntary restoration on private property by creating a “toolbox” of model habitat design and shoreline restoration actions. Types of actions could include removal of unneeded shoreline armoring and/or derelict structures, and rehabilitation of marine riparian vegetation. The program would provide technical assistance to landowners and would seek to develop incentives to encourage voluntary restoration projects on private property.

**2. Create a Soft Armoring Technical Assistance and Cost-Share Program.** This program would promote voluntary replacement of traditional “hard” shoreline armoring (concrete/riprap/wooden bulkheads) with “soft-shore” armoring techniques where appropriate and feasible. Specific designs would vary from site to site depending on each property's unique characteristics. A number of case studies and example designs are provided in *Alternative Bank Protection Methods for Puget Sound Shorelines* (Ecology 2000). Public education or incentives for shoreline bulkhead removal could help restore natural shoreline processes and enhance sediment depleted habitats and formerly important reaches of feeder bluffs.

**3. Citizen Volunteer Forage Fish Monitoring Program.** This program would offer an opportunity for citizens to work with biologists and participate in data gathering to better identify and monitor forage fish spawning areas.

**4. Create an Incentive Program to Remove Relict Structures from Intertidal areas.** This program would be focused on reclaiming intertidal habitat located beneath relict structures such as old pier footings and failed erosion control structures. Opportunities to remove such structures are found throughout Puget Sound shorelines.

## Site-Specific Restoration and Conservation

Site-specific restoration/protection measures are described below and are primarily extracted from the Shoreline Inventory and Characterization Report that was completed for the City of Normandy Park by King County (2011). Additional restoration opportunities were identified by City staff, Planning Commission members, and the public. For ease of discussion the Ecological Planning Segments shown on Map 12 (Appendix A) were used for restoration planning as they relate to ecological functions described for each segment described under the *Ecological Assessment of Shoreline Functions* section. Figure 2 shows the restoration opportunities that have been identified for this plan.

### Segment 1

The restoration potential in this segment is highly constrained by the existing development pattern of houses on the beach and at the top of bluff. While this area was categorized in the Inventory and Characterization Report (King County 2011) as being an exceptional feeder bluff area, it is too built out to provide this function. There are no other obvious parcels of land in this segment with high habitat quality that would be a priority target for conservation efforts. However, if homes are damaged

beyond repair due to high surf and storms and the parcels are for sale, the City or a conservation organization could consider purchasing them for restoration purposes. The SMP calls out this segment as the Beach Community environment with the purpose of recognizing the unique beach residential character of the area, but also to provide some management guidelines regarding protecting its natural features. Where feasible, restoration of the ecological shoreline functions within this segment is also promoted by the SMP. Restoration efforts in this segment would benefit from a programmatic approach to address: driving on the beach; houses that are generally not in a safe location due to being below steep bluffs; houses that will likely be heavily impacted by changes in sea level; and houses that are mostly sitting on and displacing intertidal habitat.

## **Segment 2**

This stretch of shoreline ranked as the highest bluff restoration priority for the entire drift cell (Johannessen et al. 2005). Therefore, opportunities for restoration in this segment would highly benefit the shoreline ecological and physical processes through restoration of the sediment supply to the Sound and the shoreline.

Parcel 664180060 is under acquisition as a land swap for an upland parcel in this segment and is a potential location for natural beach restoration or could remain as a natural feeder bluff.

There is a single house at the top of the bluff, which is located on a small promontory of land with steep slopes on three sides. The property owner also owns the adjacent shoreline property. The beach property could be restored to natural shoreline. A feasibility study (Johannessen et al. 2006) found that 535 feet of shoreline bulkhead could be removed without threatening the house on the bluff property. These 535 feet are within the area where Forterra (formerly the Cascade Land Conservancy) and the City have been working together to acquire properties referred to as the Beaconsfield properties. A follow up feasibility study to look at bulkhead removal alternatives was completed in 2010. If the property is for sale, then the City or a conservation organization could purchase it and either restore the beach to a natural condition or install soft armoring above the OHWM, if the parcel on the bluff still requires protection.

Beaconsfield is an active salmon recovery project being undertaken by the City and Forterra in the middle of this segment. The project involves purchasing approximately 1,000 feet of shoreline (27 vacant parcels). This will be an ongoing opportunity for conserving this shoreline.

In 2012, the City settled a lawsuit with an upland property owner, the Hadley-Colmenares Family, concerning rights to the bulkhead on the Beaconsfield properties. The settlement acknowledged that the Hadley-Colmenares Family owns the bulkhead and rock revetments on the Beaconsfield properties and has an easement for their construction and maintenance. The settlement also provides for the design and possible implementation of a beach nourishment program in order to provide sediment for beach feeding purposes. Finally, the settlement provides that bulkhead and rock revetment removal will not occur without the express written consent of the record owners of the Hadley-Colmenares Family properties. If consent is given, then restoration could occur.

This Beaconsfield project could be expanded slightly by acquiring a combination of conservation easements and public access easements on the two non-vacant parcels that are between the Beaconsfield project and the City's Marine View Park, provided that the Hadley-Colmenares Family does not own the bulkheads and revetments on these properties. The two parcels are generally well vegetated along the shore and could provide the public with legal access to the recently acquired lands. Further investigation into the ownership of these properties needs to be conducted before they could be considered for restoration, although they would be good candidate properties.

The City could assess other properties in this segment to determine if any conservation or restoration activities may be possible. Property owners that have residences located above on the bluff would need to agree to bulkhead removal, if that was a desired action.

A small stream mouth is located on parcel 0616000361, which is a vacant lot that is one parcel to the north of Marine View Park. This could be purchased by the City or a conservation organization for conservation/restoration through a grant. More analysis is needed to determine if salmonids might be able to use this stream mouth.



Figure 3 – Unnamed Stream Constrained at Parcels 0722049036 and 0722049029

A potential project for the long-term future is located at a stream mouth that is pinched between two houses on parcels 0722049036 and 0722049029 (Figure 3). If one or both of the properties were for

sale and the stream mouth could be restored, then this potential project could provide salmonid rearing habitat (Johannessen et al. 2005). However, this restoration would likely require removing at least one of the houses and is infeasible unless properties were available for sale and then purchased.

The City can continue to protect, conserve, and restore the beach habitat and the bluff habitat of Marine View Park. It can continue to remove non-native vegetation on the bluff and along the upper beach and replace it with native vegetation.

### ***Segment 3***

In this segment there are two potential conservation/restoration opportunities: parcel 0622049144 and the adjacent property to the south (parcel 0622049131).

Parcel 0622049144 is for sale; if purchased, it could provide a beach and shoreline restoration opportunity. This property is a parcel that is close to nine acres in size and includes about 300 feet of the densely forested shoreline (Figure 4). This type of habitat becomes increasingly rare as one progresses northward along the City's shoreline. Acquisition would therefore help the City to preserve this important habitat type.

Another potential restoration action is located on parcel 0622049131, immediately south of parcel 0622049144. If the property was purchased, then the freshwater wetland could be restored to salt marsh (Figure 4). This would entail creating some form of bridge or culvert under the private road, at a minimum. A more comprehensive restoration approach would be to remove much of the private road that is currently circling the wetland, as it appears to be largely superfluous because of a second loop road around the upland portions of the wetland that connects to the developed portions of the property. This could further restore tidal inundation to what appears to be a mostly isolated, three-acre wetland. Restoration of an estuary would allow reconnection with the Sound and provide rearing habitat for juvenile salmonids.

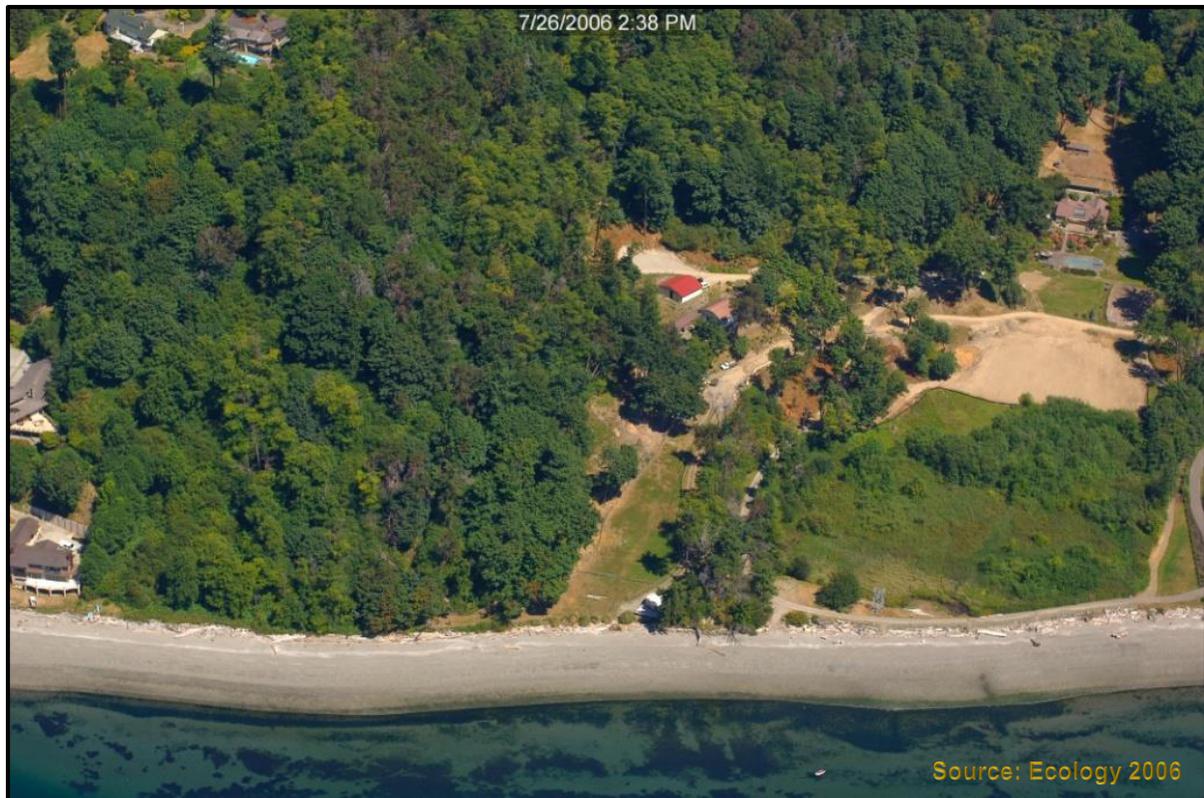


Figure 4 – Potential Beach Restoration on Parcel 0622049144 (left side) and Wetland Restoration on Parcel 0622049131 (right side)

### **Segment 4**

There is one bulkhead in this reach that is located much farther out in the intertidal than the others. When this bulkhead needs to be repaired, the bulkhead could either be removed entirely or moved back above the OHWM, allowing for more access to the upper beach to forage fish and other aquatic species.

The area along the bluff, particularly at the top of the bluff, could be revegetated with more trees. There could be a vegetation enhancement project along this entire segment that would be beneficial for ecological conservation and slope stability. The vegetation enhancement could be done so that views of Puget Sound by the residences along the bluff could be maintained.

### **Segment 5**

One potential conservation action in this reach would be to preserve the existing vegetation on the four parcels where trees still remain.

The mouth of Normandy Creek could be enhanced or partially restored, but only if the properties are for sale and could be purchased; more study of the area is needed. The creek could be daylighted between existing houses or routed through some of the lawns. However, it is not obvious how to best enhance this creek mouth within the given constraints of the existing houses and may not be feasible.

More research is needed to better understand how this system is currently piped into Puget Sound and if there are restoration/enhancement opportunities at this site.

Acquisition of parcel 6117500545 would allow potential restoration of beach and a portion of Normandy Creek that runs through the eastern and upland portion of the parcel. The property is potentially for sale. Acquisition of parcel 6117502800 could allow restoration of the mouth of Normandy Creek.

An additional restoration opportunity in this segment is to acquire the one house on parcel 3864500010 that is located on the beach and remove the structure, restoring the upper intertidal habitat. This property is currently for sale; the City or a conservation organization could purchase it for conservation/restoration purposes.

### ***Segment 6***

There are no apparent restoration opportunities in this segment. However, a programmatic assessment of feeder bluff interactions with the beach and potential opportunities to maintain or restore these functions could be completed..

### **Implementation Targets**

The following table (Table 3) outlines a schedule and potential funding sources for implementation of a variety of efforts that would improve shoreline ecological function and are described in previous sections of this report. Table 3 contains a subset of the potential restoration opportunities along the shoreline that were described for each segment above. Those opportunities not listed in Table 3 but described in this report can be evaluated by the City for later implementation. Other opportunities that were not identified in this report, but are identified by the City in the future will be added to the options for future implementation over time.

**Table 3 – Implementation Schedule and Potential Funding**

Restoration Priority or Action	Timeline or Benchmark	Potential Funding Sources
Finalize land swap of parcel 664180060 and protect and restore the natural shoreline (Segment 2)	Within 2 Years of Issuance of Updated SMP	City purchase
Purchase Beaconsfield Properties. Where legal agreements allow remove bulkheads and restore natural shoreline (Segment 2)	Within 7 Years of Issuance of Updated SMP	Forterra partnership, King County Conservation District, SFRBoard, CPF, PSRF, other sources
Purchase parcels 0622049144 and 0622049131 (Segment 3)	Within 7 Years of Issuance of Updated SMP	Forterra partnership, King County Conservation District, SFRBoard, CPF, PSRF, other sources
Purchase parcel 6117500545 and restore beach and Normandy Creek segment (Segment 5)	Within 7 Years of Issuance of Updated SMP	City funding; Forterra partnership, King County Conservation District, SFRBoard, CPF, PSRF, other sources
Purchase parcel 6117500545 and restore beach and shoreline (Segment 5)	Within 7 Years of Issuance of Updated SMP	City funding; Forterra partnership, King County Conservation District, SFRBoard, CPF, PSRF, other sources
Establish programs to assist residents with on-going native revegetation of bluff slopes and shorelines	On-going	King County Conservation District, City funds, Ecology, other grants
Establish programs that are promoted by WRIA 9 Planning	Within 8 Years of Issuance of Updated SMP	King County Shoreline Partnership, SFRBoard, CPF, PSRF, PSP funds, Ecology, City funds, other sources
Establish programs to assist with soft armoring replacement of bulkheads	Within 5 Years of Issuance of Updated SMP	King County Conservation District ongoing technical assistance, City funds, Ecology, other grants

## Monitoring Methods

### ***Evaluation and Refinement of Individual Restoration Projects, Programs, and Priorities***

The *Restoration Goals and Policies* section, the Programmatic Conservation/Restoration opportunities, Site-specific Restoration and Conservation opportunities are based on the inventory and analysis of shoreline conditions and other work that was completed as part of the SMP grant. However, exhaustive scientific information about shoreline conditions, restoration potentials, and feasible project and program design and funding is cost prohibitive at this stage.

When a restoration project is proposed for implementation by the City, other agency, or by a private party, the project should be evaluated to ensure that the project's objectives are consistent with those of this Restoration Plan, whether this Restoration Plan should be refined to consider the information about the potential restoration, and whether the project warrants implementation above other candidate projects.

It is expected that the list of potential projects and priorities will change over time, that new projects and priorities will be identified and refined, and that some opportunities will become less relevant as restoration occurs and as environmental conditions and our knowledge of them change. The City should review the list of restoration opportunities in Table 3 at least every two years to ensure that the proposed restoration measures remain relevant to actual environmental conditions and to gauge progress toward successful implementation of the Restoration Plan. The results of this review should be incorporated into a staff report, which is described in detail in the section below.

When a potential restoration project or program is evaluated, the following criteria should be used:

- Restoration meets the goals and objectives of this Restoration Plan.
- Restoration is consistent with the priorities outlined in this Restoration Plan.
- The project or program is consistent with other restoration plans.
- Restoration addresses a progressively worsening condition that will increase the scale or cost over time if future restoration efforts are postponed.
- Projects address a known degraded condition.
- Restoration has a high probability of success.
- Restoration has a high benefit-to-cost ratio.
- Restoration of processes is generally of greater importance than restoration of functions.
- Restoration avoids impacts to other processes or functions.
- Restoration is feasible, such as being located on public property or private property where the landowner is a willing participant.
- Restoration avoids conflicts with adjacent property owners.
- There is broad public support for the project or program.

### **Development Monitoring, Reporting, and Adaptive Management**

The City is required to monitor development under the Shoreline Master Program to ensure no net loss. The Normandy Park Municipal Code requires monitoring of restoration and development activities. The critical areas and flood hazard portions of the Normandy Park Municipal Code (NPMC) regulates impacts to steep slopes, shorelines, wetlands, streams, wildlife habitat, and floodplains under [NPMC 18.36](#) and [NPMC 9.02](#). The code requires mitigation or restoration where appropriate and regulates monitoring of these activities. Restoration projects would also be regulated by the NPMC and monitoring would be required to determine the success of the projects per NPMC 18.36.170.

For shoreline restoration and habitat improvement projects not covered by the regulations described above, it is recommended that implementation of a five-year maintenance and monitoring plan to document the effectiveness of shoreline enhancements and ensure compliance with permit

conditions. Success of such projects will be determined based on the data gathered during the monitoring phase, such as square feet of non-native vegetation removed, square feet of native vegetation planted or maintained, reductions in chemical usage to maintain turf, linear feet of eroding shoreline stabilized through plantings, or linear feet of shoreline armoring removed, as appropriate for the individual project goals.

It is recommended that City planning staff track all land use and development activity, including exemptions, within shoreline jurisdiction, and incorporate actions and programs of the Parks and Recreation and Public Works departments as well. A staff report could be assembled that provides basic project information, including location, permit type issued, project description, impacts, mitigation (if any), and monitoring outcomes as appropriate. Examples of data categories might include square feet of non-native vegetation removed, square feet of native vegetation planted or maintained, reductions in chemical usage to maintain turf, linear feet of eroding shoreline stabilized through plantings, or linear feet of shoreline armoring removed or replaced with soft armoring.

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**TABLES**



**Table 2 – Summary of Restoration Goals and Objectives**

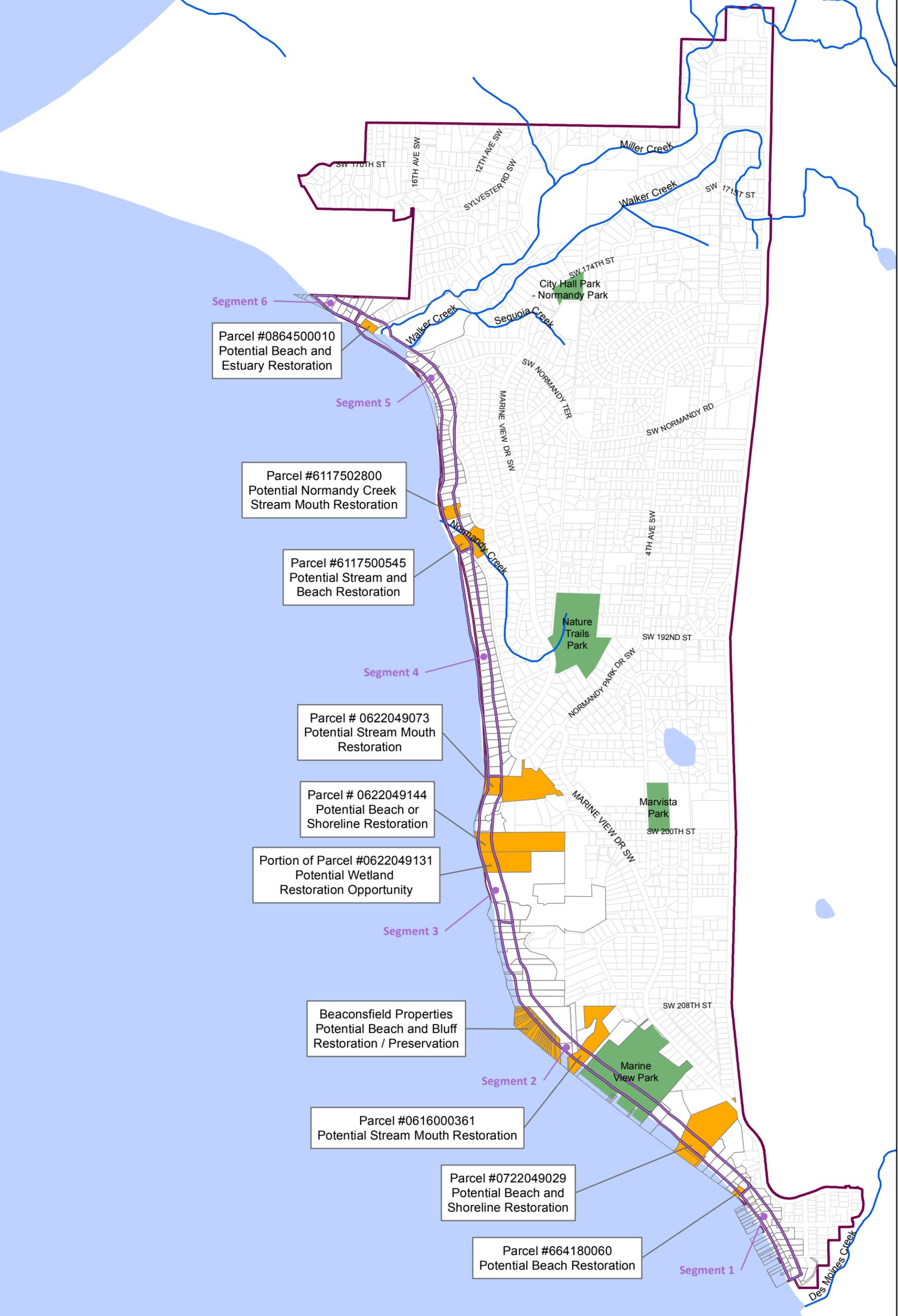
Restoration Goal	Objective development	Performance Measures	Specific Shoreline Function(s) likely to be improved by objective development and associated projects
Improve water Quality	Improve water quality and reduce the level of effective impervious surface coverage by implementing LID techniques on public projects within the City and encouraging and incentivizing property owners to reduce impervious surface coverage.	<ul style="list-style-type: none"> <li>– LID parameters including: % surface runoff, % groundwater recharge, runoff volume control, flow frequency/duration control, etc.</li> <li>– Acreage of Vegetation including % of jurisdiction</li> <li>– Water Quality Measurements (including phosphorus, toxins, nitrogen and pathogens)</li> <li>– Storm Flow measurements (peak runoff rate control)</li> </ul>	<p>Hydrologic Functions</p> <ul style="list-style-type: none"> <li>– Water storage (both ground and surface water)</li> <li>– Sediment storage</li> <li>– Removal of possible sources of excess nutrients and toxic compounds</li> <li>– Attenuation of stormwater flow energy</li> </ul>
	Target public streets and private access drives in areas within and draining to the shoreline jurisdiction for focused improvements to stormwater systems to improve water quality. Prioritize based on potential for positive impact and support of local residents.	– Water Quality Measurements (including phosphorus, toxins, nitrogen and pathogens)	<p>Hydrologic and Water Quality Functions</p> <ul style="list-style-type: none"> <li>– Water storage (both ground and surface water)</li> <li>– Sediment storage</li> <li>– Attenuation of stormwater flow energy</li> <li>– Removal of excess nutrients and toxic compounds</li> </ul>
	Encourage the use of appropriate natural herbicides and pesticides, and encourage the convenient location of hazardous waste disposal sites outside of shoreline areas.	– Water Quality Measurements of typical herbicides and pesticides	<p>Water Quality Functions</p> <ul style="list-style-type: none"> <li>– Removal of toxic compounds</li> </ul>
	The City and community can work with the Southwest Sewer District to determine if opportunities for cleaner discharge into Puget Sound at the mouth of Miller Creek is needed and possible. If needed, stormwater discharge to the sanitary sewer could be disconnected to prevent more frequent sewer overflows.	To be determined based on specific restoration objective.	Likely to improve Hydrologic and Habitat functions of Puget Sound
Protect and improve vegetation and habitat functions in upland and wetland areas	<p>At Marine View Park, use both planned limited improvements and more long term redevelopment as opportunities to improve vegetation, hydrologic, and habitat functions. Get input from resource experts, agencies, and residents on balancing restoration with human use.</p> <p>Continue to encourage and/or incentivize residents to work with King County Conservation District to improve vegetation, habitat, hydrologic functions along their shoreline properties.</p>	<p>To be determined based on specific restoration objective; may include:</p> <ul style="list-style-type: none"> <li>– Increases to areal vegetative cover and species composition (e.g. degree of diversity, area linear measurement, % cover)</li> <li>– Analysis of terrestrial, aquatic and avian species (presence, use, etc.)</li> <li>– Habitat connectivity</li> </ul>	<p>Likely to improve Hydrologic, Habitat and Vegetative functions</p> <p>Specific functions that are likely to be improved include:</p> <ul style="list-style-type: none"> <li>– Removal of possible sources of excess nutrients and toxic compounds (hydrologic and vegetative)</li> <li>– Conditions for reproduction, nesting, resting, cover, migration, etc. (habitat)</li> </ul>

Protect and improve vegetation and habitat functions in upland and wetland areas (cont'd)	Continue to maintain and improve wetland and riparian habitat within Miller and Walker Creeks	<ul style="list-style-type: none"> <li>– Wetland acreage, function, category/rating, etc.</li> <li>– Increases to areal vegetative cover and species composition (e.g. degree of diversity, vegetative succession, etc.)</li> <li>– Analysis of terrestrial, aquatic and avian species (presence, use, etc.)</li> <li>– Hydrology studies (e.g. analysis/modeling of stormwater movement through the system)</li> </ul>	<p>Habitat Functions</p> <ul style="list-style-type: none"> <li>– Conditions for reproduction, resting, cover and migration.</li> <li>– Food production and delivery.</li> </ul> <p>Although the objective is focused on habitat it is also likely to improve hydrologic and vegetative functions as well.</p>
Enhance and restore shorelines that have been modified through installation of bulkheads and other forms of hard armoring.	Where feasible and safe for residents, incentivize the removal of bulkheads and other forms of hard shoreline armoring on private properties and restore to natural shoreline.	<ul style="list-style-type: none"> <li>– Linear feet/acreage of shoreline armoring (including armoring type to capture % of hard shoreline armoring removed)</li> <li>– Qualitative surveys regarding shoreline armoring understanding and opinions.</li> </ul>	<p>Habitat Function</p> <ul style="list-style-type: none"> <li>– Improvement to nearshore and aquatic habitat, sediment supply, input of organics, prey base, structure for habitat life needs, etc.</li> </ul>
	Encourage the coordinated implementation of soft shoreline stabilization measures across multiple adjacent properties	<ul style="list-style-type: none"> <li>– Linear feet/acreage of shoreline armoring (including % of hard shoreline armoring modified to soft shoreline armoring )</li> <li>– Changes to sediment transport</li> </ul>	<p>Habitat Function</p> <ul style="list-style-type: none"> <li>– Improvement to nearshore and aquatic habitat, sediment supply, input of organics, prey base, structure for habitat life needs, etc.</li> </ul>
	Provide education, permitting assistance, and other work with Beachwatchers, King County, WRIA 9 groups and other stewards to provide outreach	<ul style="list-style-type: none"> <li>– Qualitative surveys to identify changes to public opinion and knowledge</li> </ul>	<p>Opportunity to improve Hydrologic, Habitat and Vegetative functions.</p>
	Incentivize the use of alternative soft armoring for shoreline stabilization design in currently armored areas where armoring is being reconstructed or repaired.	<ul style="list-style-type: none"> <li>– Linear feet/acreage of shoreline armoring (including % of hard shoreline armoring modified to soft shoreline armoring )</li> <li>– Changes to sediment</li> </ul>	<p>Habitat Function</p> <ul style="list-style-type: none"> <li>– Improvement to nearshore and aquatic habitat, sediment supply, input of organics, prey base, structure</li> <li>– Improvements to beach nourishment and forage fish habitat</li> </ul>
Remove regulatory impediments to restoration and enhancement projects, and introduce incentive programs to encourage private restoration actions.	<p>The City should, and private entities are encouraged to, seek funding from State, Federal, private, and other sources to implement restoration, enhancement, and acquisition projects.</p> <p>Develop processing guidelines that will streamline review of restoration-only projects.</p> <p>Allow for the use of tax incentive programs, mitigation banking, grants, land swaps, or other programs, as they are developed, to encourage restoration and enhancement of shoreline ecological functions and to protect habitat for fish, wildlife, and plants.</p>	<ul style="list-style-type: none"> <li>– Evaluation of number of permits issued for restoration and enhancement projects and average permit application review time.</li> </ul>	<p>Opportunity to improve Hydrologic, Vegetative, and Habitat functions.</p>

## FIGURES



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Segment 6  
Parcel #086450010  
Potential Beach and  
Estuary Restoration

Segment 5  
Parcel #6117502800  
Potential Normandy Creek  
Stream Mouth Restoration

Parcel #6117500545  
Potential Stream and  
Beach Restoration

Segment 4

Parcel # 0622049073  
Potential Stream Mouth  
Restoration

Parcel # 0622049144  
Potential Beach or  
Shoreline Restoration

Portion of Parcel #0622049131  
Potential Wetland  
Restoration Opportunity

Segment 3

Beaconsfield Properties  
Potential Beach and Bluff  
Restoration / Preservation

Segment 2

Parcel #0616000361  
Potential Stream Mouth Restoration

Parcel #0722049029  
Potential Beach and  
Shoreline Restoration

Parcel #664180060  
Potential Beach Restoration

Segment 1

Normandy Park SMP Update Normandy Park	
<b>DRAFT Potential Restoration/Preservation Opportunities</b>	
12751-18	6/4/14
 <b>HARTCROWSER</b>	Figure <b>2</b>

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**APPENDIX A**  
**Map 12 – Ecological Segments Defined Along the  
Shoreline at Normandy Park**

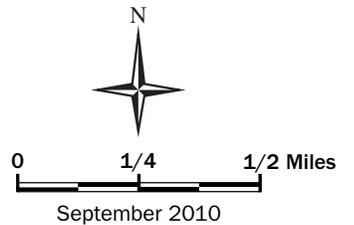


# Normandy Park Shoreline Characterization Report



**Map 12**  
**Shoreline Segments**

-  **Segment and Number**
-  **Associated Wetland**
-  **Incorporated Area**
-  **Puget Sound/Lake**
-  **Stream**
-  **Major Road**



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**The shoreline jurisdiction boundaries shown on this map are only an approximation. The Ordinary High Water Mark has not been precisely mapped.**



**King County**

Department of  
Natural Resources and Parks  
**Water and Land Resources Division**

Map created by DNRP GIS/Visual Communications/Web Unit

Data King County Datasets

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