Planning Commission Meeting Date: February 21, 2019 **Agenda Item: 6a.**

PLANNING COMMISSION AGENDA ITEM

CITY OF SHORELINE, WASHINGTON

AGENDA TITLE: Periodic Review of Shoreline Master Program (SMP)
DEPARTMENT: Planning & Community Development
PRESENTED BY: Miranda Redinger, AICP, Senior Planner
Kate Skone, Associate Planner

☐ Public Hearing	☒ Study Session	☐ Recommendation Only
☐ Discussion	☐ Update	☐ Other

INTRODUCTION AND BACKGROUND

The Shoreline Management Act (SMA), chapter 90.58 RCW requires the City to have a shoreline master program setting forth goals, policies, and use regulations for those areas within the jurisdictional boundaries of the SMA. After incorporation, the City relied on King County's 1996 Shoreline Management Master Program for compliance with the SMA.

This changed in 2013 when the City's current Shoreline Master Program (SMP) was adopted on August 5, 2013 via Ordinance No. 668 and became effective on September 2, 2013. The SMP is codified at Division II of Shoreline Municipal Code (SMC) Title 20, Chapters SMC 20.200, 20.210, 20.220, and 20.230. Title 20 can be accessed at the following link:
https://www.codepublishing.com/WA/Shoreline/#!/html/Shoreline20/Shoreline20.html

After a master program has been approved, RCW 90.58.080(4) requires the City to periodically update its SMP, first no later than June 30, 2019, and then once every eight years thereafter. While the City did have a shoreline master program due to its reliance on King County's, the 2013 SMP represented the City's first development of a shoreline master program and was based on a comprehensive analysis of the shoreline condition. The present action represents a Periodic Review, which is a less prescriptive and intensive process intended to ensure consistency with the SMA and its regulatory guidelines along with the City's Growth Management Act (GMA)-enacted Comprehensive Plan and development regulations.

The Commission held an introductory study session for the SMP Periodic Review on December 6, 2018. The staff report for this meeting is available here:

Approved By: Project Manager MR **Planning Director** RM

http://www.shorelinewa.gov/home/showdocument?id=41429.

As discussed on December 6, 2018, proposed changes to the SMP fall primarily into two categories: those required by Ecology to incorporate changes in State guidance since the 2013 SMP, and those recommended by the City, primarily to integrate changes that were adopted through the Critical Areas Ordinance (CAO) in 2015 into the SMP, as well as general housekeeping resulting in various minor amendments.

The Commission held another study session on January 17, 2019 to review the State required updates and three (3) of the SMC Chapters (20.200 Shoreline Master Plan, 20.210 Definitions, and 20.220 Administrative Procedures) that address City-recommended updates. The staff report for this meeting is available here: http://www.shorelinewa.gov/home/showdocument?id=41810.

This staff report will introduce specific proposed changes to the remaining SMC Chapters (20.230 General Policies and Regulations- Attachment A, 20.240 SMP Critical Areas Regulations- Attachment B, 13.12 Floodplain Management- Attachment C, and 20.80 Citywide Critical Areas- Attachment D), which show proposed amendments in legislative format.

Note that the length of these chapters is largely due to incorporating the majority of SMC Chapter 20.80, Critical Areas, into the SMP, so Chapter 20.240 is new, but the code language is not. Likewise, Attachments H and I were components of the 2013 SMP and included for context, not intended to be reviewed in full.

DISCUSSION

Shoreline Municipal Code Chapters

Chapter 20.230 General Policies and Regulations- Attachment A
Proposed revisions include removal of the section addressing environmentally sensitive areas within the shoreline, as the 2015 CAO standards are to be located in a separate chapter, 20.240. Additionally, revisions are proposed to clarify that existing, previously permitted stabilization measures, such as bulkheads, are considered engineered and abated hazards and shall not be classified as geologic hazard areas. Also, proposed revisions include minor amendments for housekeeping and clarification.

Chapter 20.240 SMP Critical Areas Regulations- Attachment B
This is a new proposed chapter that integrates the 2015 CAO, along with subsequent amendments, into the SMP consistent with the SMA's requirements. For the most part, SMC Chapter 20.80, Critical Areas, has been copied into the new proposed Chapter 20.240. However, note that some of the provisions from 20.80 were excluded from the SMP Critical Areas Regulations due to conflicts with the Shoreline Management Act

(SMA). These provisions include reasonable use exceptions, administrative exemptions, and waivers.

Chapter 13.12 Floodplain Management- Attachment C
Proposed revisions include designating the Planning and Community Development Director as the floodplain administrator so that all authority is in one department, rather than dividing the authority with Public Works.

Chapter 20.80 Critical Areas- Attachment D
Proposed revisions include a minor update to the reference to the SMP Critical Areas Regulations to refer to the new proposed Chapter 20.240.

Comprehensive Plan

In December 2012, when Council adopted a major update to the Comprehensive Plan through Ordinance No. 649, the SMP was included as an Appendix rather than an Element, and SMP Goals & Policies and Supporting Analysis documents were referenced rather than included directly within the Comprehensive Plan document. The current SMP Periodic Review process is an opportunity to remedy this and bring the Comprehensive Plan into alignment with RCW 36.70A.480(1), which states that the goals and policies of an SMP "shall be considered an element" of the Comprehensive Plan.

According to RCW 36.70A.130(2)(a)(iii) Comprehensive plans- Review procedures and schedules- Amendments:
Amendments may be considered more frequently than once per year under the following circumstances:
*(iii) The adoption or amendment of a shoreline master program under the procedures set forth in chapter **90.58** RCW.*

Attachment E shows the current SMP Appendix to the Comprehensive Plan. Text changes to the introductory paragraphs are shown in Attachment E(2), following the pdf of the current text, in legislative format. Attachment F shows the existing Goals and Policies currently contained in SMC 20.200.040 Shoreline elements. The intent is to merge these documents so that the new SMP Element has the same format as the other Comprehensive Plan elements (introduction followed by Goals and Policies). No changes are proposed to the Goals and Policies.

Attachment G is the existing Table of Contents for the Comprehensive Plan. Changes will include deleting the current SMP (Appendix A) and adding the revised SMP as Element 10, both in the Goals and Policies section and the Supporting Analysis section. Attachment H is the 2010 Inventory and Characterization Report; Attachment I is the 2012 Cumulative Impacts Analysis (CIA). Both of these documents, along with the

addendum to the CIA that is currently under development (see Next Steps below), will comprise the Supporting Analysis section for the new SMP as Element 10 of the Comprehensive Plan.

NEXT STEPS

Staff has contracted Environmental Science Associates (ESA) to develop an addendum to the 2012 CIA and a non-project SEPA checklist. This will be included in the packet for the April 4 public hearing and the addendum to the CIA will be adopted as part of the Supporting Analysis for the Comprehensive Plan amendment, which will be included in Ordinance No. 856.

April 4, 2019 - Planning Commission Public Hearing (with Open House prior to meeting)
May 6, 2019 - Council Study Session
June 3, 2019 - Council Adopts Ordinance No. 856

RECOMMENDATION

No action is required at this time. This Study Session is an opportunity for the Commission to discuss proposed code language and provide guidance prior to the public hearing.

ATTACHMENTS

Attachment A: Chapter 20.230 General Policies and Regulations
Attachment B: Chapter 20.240 SMP Critical Areas Regulations
Attachment C: Chapter 13.12 Floodplain Management
Attachment D: Chapter 20.80 Critical Areas
Attachment E: SMP Appendix to Comprehensive Plan
Attachment E(2): SMP Appendix to Comprehensive Plan- proposed text changes in legislative format
Attachment F: SMP Policies for Comprehensive Plan Element
Attachment G: Comprehensive Plan Table of Contents
Attachment H: 2010 Inventory and Characterization Report- new Comprehensive Plan Element 10 Supporting Analysis
Attachment I: 2012 Cumulative Impacts Analysis- new Comprehensive Plan Element 10 Supporting Analysis

Attachment A - Chapter 20.230 General Policies and Regulations

Chapter 20.230
SMP Shoreline Policies and Regulations

Sections:

Subchapter 1.
General Policies and Regulations

20.230.010 General.

The general policies and regulations apply to all uses and activities that may occur within the City's shoreline jurisdiction regardless of thise Shoreline Master Program's environment designation. These policies and regulations provide the overall framework for the management of the shoreline. Use these general regulations in conjunction with Subchapter 2 of this chapter, Specific Shoreline Use Policies and Regulations.

20.230.020 Environmental.

The Shoreline Management Act (SMA) is concerned with the environmental impacts that development, use, or activity may have on the fragile shorelines of the State. Development and certain uses or activities within the regulated shoreline may degrade the shoreline and its waters, and may damage or inhibit important species and their habitat.

A. **General Environmental Policies and Regulations.**

Policies

1. The adverse impacts of shoreline developments and activities on the natural environment, critical areas and habitats for proposed, threatened, and endangered species should be minimized during all phases of development (e.g., design, construction, operation, and management).

2. Shoreline developments that protect and/or contribute to the long-term restoration of habitat for proposed, threatened, and endangered species are consistent with the fundamental goals of this Master Program. Shoreline developments that propose to enhance critical areas, other natural characteristics, resources of the shoreline, and/or provide public access and recreational opportunities to the shoreline are also consistent with the fundamental goals of this Master Program, and should be encouraged.

Regulations

1. All shoreline development and activity shall be located, designed, constructed, and managed in a manner that mitigates adverse impacts to the environment. When applying mitigation to avoid or minimize significant adverse effects and significant ecological impacts, the City will apply the following sequence of steps in order of priority, with subsection (A)(1)(a) of this section being top priority:

a. Avoiding the impact altogether by not taking a certain action or parts of an action;

b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;

c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

d. Reducing or eliminating the impact over time by preservation and maintenance operations;

e. Compensating for the impact by replacing, enhancing or providing substitute resources or environments; or

f. Monitoring the impact and the compensation projects (from subsection (A)(1)(e) of this section) and taking appropriate corrective measures.

Efforts to avoid and minimize impacts must be documented in a manner acceptable to the Director prior to the approval of mitigation and/or compensation actions.

2. All shoreline development and activity shall be located, designed, constructed, and managed in a manner that assures no net loss of shoreline ecological function.

3. All shoreline development shall be located, designed, constructed, and managed to protect the functions and values of critical areas consistent with ~~the Shoreline Critical Area Regulations (Appendix A).~~ the SMP Critical Areas Regulations contained in Chapter 20.240 SMC.

4. All shoreline development shall be located and designed to avoid or minimize the need for shoreline stabilization measures and flood protection works, such as bulkheads, revetments, dikes, levees, or substantial site regrading and dredging. Where measures and works are demonstrated to be necessary, biostabilization techniques shall be the preferred design option unless demonstrated to be infeasible, or when other alternatives will have less impact on the shoreline environment.

5. All shoreline development and activity shall be located, designed, constructed, operated, and managed to minimize interference with beneficial natural shoreline processes, such as water circulation, sand and gravel movement, erosion, and accretion to ensure no net loss of shoreline ecological function.

6. In approving shoreline developments, the Director shall ensure that the development will maintain, enhance, or restore desirable shoreline features, as well as ensure no net loss of ecological functions. To this end, the Director may adjust and/or prescribe project dimensions,

location of project components on the site, intensity of use, screening, and mitigation as deemed appropriate. Mitigation shall be required of developments that would otherwise result in net loss of ecological functions.

7. In approving shoreline developments, the Director shall consider short- and long-term adverse environmental impacts. In addition, the Director shall consider the cumulative adverse impacts of the development, particularly the precedence effect of allowing one development, which could generate or attract additional development. Identified significant short-term, long-term, and cumulative adverse environmental impacts lacking appropriate mitigation shall be sufficient reason for permit denial.

8. As a condition of approval, the Director may require periodic monitoring for up to 10 years from the date of completed development to ensure the success of required mitigation. Mitigation plans shall include at a minimum:

a. Inventory of the existing shoreline environment including the physical, chemical, and biological elements, and provide an assessment of each element's condition;

b. A discussion of the project's impacts and their effect on the ecological functions necessary to support existing shoreline resources;

c. A discussion of any Federal, State, or local special management recommendations that have been developed for wetlands, species, or habitats located on the site;

d. An assessment of habitat recommendations proposed by resource agencies and their applicability to the proposal;

e. A discussion of measures to preserve existing habitats and opportunities to restore habitats that were degraded prior to the proposed land use activity. Mitigation plans shall include at a minimum: planting and soil specifications (in the case of mitigation planting projects), success standards, and contingency plans;

f. A discussion of proposed measures that mitigate the impacts of the project and establish success criteria;

g. An evaluation of the anticipated effectiveness of the proposed mitigation measures;

h. A discussion of proposed management practices that will protect fish and wildlife habitat after the project site has been fully developed, including proposed monitoring and maintenance programs;

i. A monitoring plan, including scientific procedures to be used to establish success or failure of the project, sampling points, success criteria, and a monitoring schedule; and

j. Any additional information necessary to determine the impacts of a proposal and appropriate mitigation.

9. Shoreline development shall not be permitted if it substantially degrades~~significantly impacts~~ the natural character of the shoreline, natural resources, or public recreational use of the shoreline. “Significant” is defined in the State Environmental Policy Act (SEPA) Rules in WAC 197-11-794.

10. Where provisions of this Master Program conflict with each other, or with other laws, ordinances or programs, the most restrictive provisions shall apply.

B. **Earth.**

Policies

1. Beaches are valued for recreation and may provide fish spawning substrate. Development that could disrupt these shoreforms may be allowed:

a. When such disruption would not reduce shoreline ecological function;

b. Where there is a demonstrated public benefit; and/or

c. Where the Washington State Department of Fish and Wildlife determines there would be no significant impact to the fisheries resource.

Regulations

1. Developments that alter the shoreline topography may be approved if:

a. Flood events will not increase in frequency or severity resulting from the alteration; and/or

b. The alteration would not impact natural habitat forming processes and would not reduce ecological functions. Mitigation is required for projects that would reduce ecological functions to ensure no net loss of function.

2. The applicant shall incorporate all known, available, and reasonable methods of prevention, control, and treatment measures into stormwater pollution prevention during and post construction.

3. All debris and other waste materials from construction shall be disposed of in such a manner as to prevent their entry into the water body.

4. All disposal sites for soils and materials resulting from the shoreline development shall be identified and approved before permit issuance.

C. **Water.**

Policies

1. Shoreline development and activities shall result in no net loss of ecological functions.

2. Development and regulated activities shall minimize impacts to hydrogeologic processes, surface water drainage, and ground water recharge.

3. Measures shall be incorporated into the development, use, or activity to protect water bodies and wetlands from all sources of pollution including, but not limited to, sediment and silt, petrochemicals, and wastes and dredge spoils.

4. Adequate provisions to prevent water runoff from contaminating surface and ground water shall be included in development design. The Director may specify the method of surface water control and maintenance programs. Surface water control must comply with the adopted stormwater manual.

5. All measures for the treatment of surface water runoff for the purpose of maintaining and/or enhancing water quality shall be conducted on site. Off-site treatment facilities may be considered if on-site treatment is not feasible.

6. Point and nonpoint source pollution should be managed on a basin-wide basis to protect water quality and support the efforts of shoreline property owners to maintain shoreline ecological functions.

Regulations

1. Pesticides, herbicides and fertilizers that have been identified by State or Federal agencies as harmful to humans, wildlife, or fish shall not be used on City-owned property within the shoreline jurisdiction or for development or uses approved under a substantial development permit, shoreline conditional use permit or shoreline variance, except as allowed by the Director for the following circumstances:

a. When use of pesticides, herbicides and fertilizers is consistent with the best management practices (BMPs) for the project or use proposed;

b. When the Director determines that an emergency situation exists where there is a serious threat to public safety, health or the environment and that an otherwise prohibited application must be used as a last resort.

Where chemical fertilizer, herbicide, or pesticide use is necessary to protect existing natural vegetation or establish new vegetation as part of an erosion control or mitigation plan, the use of time release fertilizer and herbicides shall be preferred over liquid or concentrate application, except as used in targeted hand applications.

2. The release of oil, chemical, or hazardous materials onto or into the water is prohibited. Equipment for the transportation, storage, handling, or application of such materials shall be maintained in a safe and leakproof condition. If there is evidence of leakage, the further use of such equipment shall be suspended until the deficiency has been satisfactorily corrected. During construction, vehicle refueling and vehicle maintenance shall occur outside of regulated shoreline areas.

3. The bulk storage of oil, fuel, chemical, or hazardous materials, on either a temporary or a permanent basis, is prohibited, except for uses allowed by the zoning classification. For the purpose of this section, heating oil, small boat fuel, yard maintenance, equipment fuel, propane, sewage sumps, and similar items common to single-family residential uses are not included in this definition.

D. **Plants and Animals.**

Policies

1. In general, this Master Program shall strive to protect and restore anadromous fish resources in the Puget Sound and its tributaries within the City of Shoreline.

2. Shoreline development, uses, and activities shall be:

a. Located and conducted in a manner that minimizes impacts to existing ecological values and natural resources of the area, conserves properly functioning conditions, and ensures no net loss of shoreline ecological functions;

b. Scheduled to protect biological productivity and to minimize interference with fish resources including anadromous fish migration, spawning, and rearing activity;

c. Designed to avoid the removal of trees in shorelines wherever practicable, and to minimize the removal of other woody vegetation. Where riparian vegetation is removed, measures to mitigate the loss of vegetation shall be implemented to ensure no net loss; and

d. Designed to minimize impacts to the natural character of the shoreline as much as possible.

Regulations

1. Mitigation shall be required of the applicant for the loss of fish and wildlife resources, and natural systems, including riparian vegetation, wetlands, and ~~sensitive~~other environmentally critical areas. The mitigation required shall be commensurate to the value and type of resource or system impacted by development and activity in the shoreline. On-site compensatory mitigation shall be the preferred mitigation option, except where off-site mitigation can be demonstrated to be more beneficial to fish and wildlife resources, and natural systems, including riparian vegetation, wetlands, and critical~~sensitive~~ areas. If on-site compensatory mitigation is not feasible or if off-site mitigation is demonstrated to be more beneficial to the shoreline environment, the applicant shall provide funding for a publicly sponsored restoration or enhancement program in the City of Shoreline.

2. Enhancement, restoration, and/or creation of coniferous riparian forest or forested riparian wetland shall be the preferred mitigation for impacts to riparian vegetation and wetlands when avoidance is not possible. Preference will be based on site-specific recommendation of qualified professional. Alterations to fish and wildlife habitat conservation areas should be avoided. If they

cannot be avoided, mitigation is required, and a habitat management plan shall be prepared as required in SMC 20.240.274~~20.80.290 and 20.80.300~~.

3. Habitat management plans shall be forwarded by the applicant to the appropriate State and/or Federal resource agencies for review and comment. The City will provide the applicant with a list of addressees for this purpose.

4. Based on the habitat management plan, and comments from other agencies, the Director may require mitigating measures to reduce the impacts of the proposal on the fish and wildlife habitat conservation areas. Mitigating measures may include, but are not limited to:

a. Increased or enhanced buffers;

b. Setbacks for permanent and temporary structures;

c. Reduced project scope;

d. Limitations on construction hours;

e. Limitations on hours of operation; and/or

f. Relocation of access.

5. Mitigation activities shall be monitored to determine effectiveness of the habitat mitigation plan. Monitoring shall be accomplished by a third party, subject to the approval by the Director, and shall have the concurrence of the U.S. Fish and Wildlife Service, NOAA Fisheries, Washington State Department of Fish and Wildlife, and, where applicable, the Washington State Department of Ecology. Monitoring shall occur for up to 10 years following implementation of the plan. Results of the monitoring shall be publicly available and reported to the U.S. Fish and Wildlife Service and National Marine Fisheries Service. Reports shall contain the following information:

a. A list and map of parcels subject to this requirement;

b. The implementation status of the habitat management plans;

c. Status of the improvements (e.g., updates if success standards are being met, what types of remedial actions have been implemented); and

d. Recommendations for corrective measures if necessary.

6. If proposed mitigation is found to be inadequate, or if adequate mitigation is determined to be impossible, the application shall be denied.

7. Timing of in-water construction, development, or activity shall be determined by Washington State Department of Fish and Wildlife.

8. Properties that are located in the urban conservancy shoreline environment designation shall retain trees that are 12 inches or more in diameter. Trees determined by a certified arborist to be hazardous or diseased may be removed upon approval by the City. If healthy or

nonhazardous trees are removed, each removed tree must be replaced with at least three six-foot-tall trees, one 18-foot-tall tree, or one 12-foot plus one six-foot-tall tree. Trees must be of the same species removed, or equivalent native tree species.

E. **Noise.**

Policy

1. Noise levels shall not interfere with the quiet enjoyment of the shoreline.

Regulations

1. Any noise emanating from a shoreline use or activity shall be muffled so as to not interfere with the designated use of adjoining properties. This determination shall take into consideration ambient noise levels, intermittent beat, frequency, and shrillness.

2. Ambient noise levels shall be a factor in evaluating a shoreline permit application. Shoreline developments that would increase noise levels to the extent that the designated use of the shoreline would be disrupted shall be prohibited. Noise shall be evaluated pursuant to Chapter 9.05 SMC Noise Control.~~Specific maximum environment noise levels can be found in WAC 173-60-040.~~

F. **Public Health.**

Policy

1. All development within the regulated shoreline shall be located, constructed, and operated so as not to be a hazard to public health and safety.

Regulations

1. Development shall be designed to conform to the codes and ordinances adopted by the City.

G. **Land Use.**

Policy

1. The size of the shoreline development and the intensity of the use shall be compatible with the surrounding environment and uses. The City of Shoreline may prescribe operation intensity, landscaping, and screening standards to ensure compatibility with the character and features of the surrounding area.

2. Shoreline developments shall minimize land use conflicts to properties adjacent to, upstream, and downstream of the proposed site.

Regulations

1. In reviewing permit applications, the City shall consider current and potential public use of the shoreline, total water surface reduction, and restriction to navigation.

2. Development within the designated shoreline shall comply with the development and uses standards for the underlying zoning district.

H. **Aesthetics.**

Policy

1. Development should be designed to minimize the negative aesthetic impact structures have on the shoreline by avoiding placement of service areas, parking lots, and/or view- blocking structures adjacent to the shoreline.

Regulations

1. Development shall be designed to comply with the code standards required in the underlying zoning districte.

2. If the zoning and use require landscaping, or if planting is required for mitigation by the Director, the property owner shall provide a landscape plan that provides suitable screening that does not block public views.

3. Development on or over the water shall be constructed as far landward as possible to avoid interference with views from surrounding properties and adjoining waters.

4. Development on the water shall be constructed of nonreflective materials that are compatible in terms of color and texture with the surrounding area.

5. Lighting shall be properly directed and shielded to avoid impacts to fish and off-site glare.

I. **Historical/Cultural.**

Policy

1. Development should strive to preserve historic or culturally significant resources.

Regulations

1. Developments that propose to alter historic or culturally significant resources identified by the National Trust for Historic Preservation, the Washington State Department of Archaeology and Historic Preservation, the King County Historic Preservation Program, or the City of Shoreline Historic Resource Inventory, or resources that could potentially be designated as historically or culturally significant, shall follow the applicable Federal, State, County, or local review process(es).

2. All shoreline permits issued by the City require immediate work stoppage and City notification when any item of archaeological interest is uncovered during excavation. The applicant or project owner shall notify the Washington State Department of Archaeology and Historic Preservation Office, affected Indian tribes, and the City.

3. Where archaeological or historic sites have been identified, and it is determined that public access to the site will not damage or reduce the cultural value of the site, access may be required consistent with SMC 20.230.040.

~~**20.230.030 Environmentally sensitive areas within the shoreline.**~~

~~A. **Critical Areas.**~~

~~General Policy~~

~~1. Preserve and protect unique, rare, and fragile natural and manmade features and wildlife habitats.~~

~~2. Enhance the diversity of aquatic life, wildlife, and habitat within the shoreline.~~

~~3. Conserve and maintain designated open spaces for ecological, educational, and recreational purposes.~~

~~4. Recognize that the interest and concern of the public are essential to the improvement of the environment, and sponsor and support public information programs.~~

~~5. The level of public access should be appropriate to the degree of uniqueness or fragility of the geological and biological characteristics of the shoreline (e.g., wetlands, spawning areas).~~

~~6. Discourage intensive development of shoreline areas that are identified as hazardous or environmentally sensitive.~~

~~General Regulations~~

~~1. Critical areas in shoreline jurisdiction are regulated by the critical areas regulations (which were adopted on February 27, 2006, by Ordinance No. 398) codified under Chapter~~ 20.80 ~~SMC, which is herein incorporated into this SMP with the exceptions of the following:~~

~~a. SMC 20.80.030.~~

~~b. SMC 20.80.040.~~

~~c. Chapter 20.80 SMC, Subchapter 4, Wetlands.~~

~~d. SMC 20.80.310.~~

~~e. SMC 20.80.320.~~

~~f. SMC 20.80.330.~~

~~g. SMC 20.80.340.~~

~~h. SMC 20.80.350.~~

~~2. The provisions of Chapter 20.80 SMC, Critical Areas, must be factored into decisions regarding development within the regulated shoreline and associated critical areas.~~

~~3. All shoreline uses and activities shall be located, designed, constructed, and managed to protect or at least not adversely affect those natural features which are valuable, fragile, or~~

unique in the region. They should also facilitate the appropriate intensity of human use of such features, including but not limited to:

a. Wetlands, including but not limited to marshes, bogs, and swamps;

b. Fish and wildlife habitats, including streams and wetlands, nesting areas and migratory routes, spawning areas, and the presence of proposed or listed species;

c. Natural or manmade vistas or features;

d. Flood hazard areas; and/or

e. Geologically hazardous areas, including erosion, landslide, and seismic hazard areas.

4. The standards of the City of Shoreline's critical area regulations shall apply within the shoreline jurisdiction, where critical areas are present. If there are any conflicts or unclear distinctions between the Master Program and the City's critical areas regulations, the most restrictive requirements apply as determined by the City.

B. **Floodplain Management.** The following policies and regulations must be factored into decisions regarding all flood management planning and development within that portion of the 100-year floodplain that falls within Shoreline's shoreline jurisdiction (within 200 feet of OHWM). Floodplain management involves actions taken with the primary purpose of preventing or mitigating damage due to flooding. Floodplain management can involve planning and zoning to control development, either to reduce risks to human life and property, or to prevent development from contributing to the severity of flooding. Floodplain management can also address the design of developments to reduce flood damage and the construction of flood controls, such as dikes, dams, engineered floodways, and bioengineering.

Policy

1. Flood management planning should be undertaken in a coordinated manner among affected property owners and public agencies and should consider the entire coastal system. This planning should consider off-site impacts such as erosion, accretion, and/or flood damage that might occur if shore protection structures are constructed.

2. Nonstructural control solutions are preferred over structural flood control devices, and should be used wherever possible when control devices are needed. Nonstructural controls include such actions as prohibiting or limiting development in areas that are historically flooded or limiting increases in peak flow runoff from new upland development. Structural solutions to reduce shoreline damage should be allowed only after it is demonstrated that nonstructural solutions would not be able to reduce the damage.

3. Substantial stream channel modification, realignment, and straightening should be discouraged as a means of flood protection.

4. Where possible, public access should be integrated into the design of publicly financed flood management facilities.

5. The City supports the protection and preservation of the aquatic environment and the habitats it provides, and advocates balancing these interests with the City's intention to ensure protection of life and property from damage caused by flooding.

6. Development should avoid potential channel migration impacts.

Regulations

1. The City shall require and utilize the following information as appropriate during its review of shoreline flood management projects and programs:

a. Stream channel hydraulics and floodway characteristics, up and downstream from the project area;

b. Existing shoreline stabilization and flood protection works within the area;

c. Physical, geological, and soil characteristics of the area;

d. Biological resources and predicted impact to coastal ecology, including fish, vegetation, and animal habitat;

e. Predicted impact upon area, shore, and hydraulic processes, adjacent properties, and shoreline and water uses; and/or

f. Analysis of alternative flood protection measures, both nonstructural and structural.

2. The City shall require engineered design of flood protection works where such projects may cause interference with normal geohydraulic processes, off-site impacts, or adverse effects to shoreline resources and uses. Nonstructural methods of flood protection shall be preferred over structural solutions when the relocation of existing shoreline development is not feasible.

C. **Wetlands.** Presently, the wetlands within the City's shoreline jurisdiction have not been delineated and rated using current State standards. As the wetland category combined with the habitat functions rating defines the required buffers using current State standards, the requirements of this section apply to any new development application in the vicinity of an associated wetland. At that time, the wetland and its buffers would need to be categorized and delineated and the activities would be regulated using the following standards.

1. **Policy.**

a. Wetland ecosystems serve many important ecological and environmental functions, which are beneficial to the public welfare. Such functions include, but are not limited to, providing food, breeding, nesting and/or rearing habitat for fish and wildlife; recharging and discharging ground water; contributing to stream flow during low flow periods; stabilizing stream banks and shorelines; storing storm and floodwaters to reduce flooding and erosion; and improving water

~~quality through biofiltration, adsorption, and retention and transformation of sediments, nutrients, and toxicants; as well as education and scientific research.~~

~~b. Wetland areas should be identified according to established identification and delineation procedures and provided appropriate protection consistent with the policies and regulations of this Master Program.~~

~~c. The greatest protection should be provided to wetlands of exceptional resource value, which are defined as those wetlands that include rare, sensitive, or irreplaceable systems such as:~~

~~i. Documented or potential habitat for an endangered, threatened, or sensitive species;~~

~~ii. High quality native wetland systems as determined by the Washington State Natural Heritage Program;~~

~~iii. Significant habitat for fish or aquatic species as determined by the appropriate State resource agency;~~

~~iv. Diverse wetlands exhibiting a high mixture of wetland classes and subclasses as defined in the U.S. Fish and Wildlife Service classification system;~~

~~v. Mature forested swamp communities; and/or~~

~~vi. Sphagnum bogs or fens.~~

~~d. A wetland buffer of adequate width should be maintained between a wetland and the adjacent development to protect the functions and integrity of the wetland.~~

~~e. The width of the established buffer zone should be based upon the functions and sensitivity of the wetland, the characteristics of the existing buffer, and the potential impacts associated with the adjacent land use.~~

~~f. All activities that could potentially affect wetland ecosystems should be controlled both within the wetland and the buffer zone to prevent adverse impacts to the wetland functions.~~

~~g. No wetland alteration should be authorized unless it can be shown that the impact is both unavoidable and necessary, and that resultant impacts are offset through the deliberate restoration, creation, or enhancement of wetlands.~~

~~h. Wetland restoration, creation, and enhancement projects should result in no net loss of wetland acreage and functions. Where feasible, wetland quality should be improved.~~

~~i. Wetlands that are impacted by activities of a temporary nature should be restored immediately upon project completion.~~

~~j. In-kind replacement of functional wetland values is preferred. Where in-kind replacement is not feasible or practical due to the characteristics of the existing wetland, substitute ecological resources of equal or greater value should be provided.~~

k. On-site replacement of wetlands is preferred. Where on-site replacement of a wetland is not feasible or practical due to characteristics of the existing location, replacement should occur within the same watershed and in as close proximity to the original wetland as possible.

l. Where possible, wetland restoration, creation, and enhancement projects should be completed prior to wetland alteration. In all other cases, replacement should be completed prior to use or occupancy of the activity or development.

m. Applicants should develop comprehensive mitigation plans to ensure long-term success of the wetland restoration, creation, or enhancement project. Such plans should provide for sufficient monitoring and contingencies to ensure wetland persistence.

n. Applicants should demonstrate sufficient scientific expertise, supervisory capability, and financial resources to complete and monitor the mitigation project.

o. Proposals for restoration, creation, or enhancement should be coordinated with appropriate resource agencies to ensure adequate design and consistency with other regulatory requirements.

p. Activities should be prevented in wetland buffer zones except where such activities have no adverse impacts on wetland ecosystem functions.

q. Wetland buffer zones should be retained in their natural condition unless revegetation is necessary to improve or restore the buffer.

r. Land use should be regulated to avoid adverse effects on wetlands and maintain the functions and values of wetlands throughout Shoreline, and review procedures should be established for development proposals in and adjacent to wetlands.

2. **Regulations.**

a. **Identification and Delineation.** Identification of wetlands and delineation of their boundaries pursuant to this chapter shall be done in accordance with the approved Federal wetland delineation manual and applicable regional supplements. All areas within the City meeting the wetland designation criteria in that procedure are hereby designated critical areas and are subject to the provisions of this chapter. Wetland delineations are valid for five years; after such date the City shall determine whether a revision or additional assessment is necessary.

b. **Rating.** Wetlands shall be rated according to the Washington Department of Ecology wetland rating system, as set forth in the Washington State Wetland Rating System for Western Washington (Ecology Publication #04-06-025, or as revised and Wetlands Guidance for Small Cities Western approved by Ecology), which contains the definitions and methods for determining whether the criteria below are met.

i. **Category I.** Category I wetlands are: (1) relatively undisturbed estuarine wetlands larger than one acre; (2) wetlands that are identified by scientists of the Washington Natural Heritage Program/DNR as high quality wetlands; (3) bogs; (4) mature and old-growth forested wetlands larger than one acre; (5) wetlands in undisturbed coastal lagoons; and (6) wetlands that perform many functions well (scoring 70 points or more). These wetlands: (1) represent unique or rare wetland types; (2) are more sensitive to disturbance than most wetlands; (3) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or (4) provide a high level of functions.

ii. **Category II.** Category II wetlands are: (1) estuarine wetlands smaller than one acre, or disturbed estuarine wetlands larger than one acre; (2) interdunal wetlands larger than one acre; (3) disturbed coastal lagoons or (4) wetlands with a moderately high level of functions (scoring between 51 and 69 points).

iii. **Category III.** Category III wetlands are: (1) wetlands with a moderate level of functions (scoring between 30 and 50 points); and (2) interdunal wetlands between 0.1 and one acre. Wetlands scoring between 30 and 50 points generally have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.

iv. **Category IV.** Category IV wetlands have the lowest levels of functions (scoring fewer than 30 points) and are often heavily disturbed. These are wetlands that we should be able to replace, or in some cases to improve. However, experience has shown that replacement cannot be guaranteed in any specific case. These wetlands may provide some important functions, and should be protected to some degree.

c. **Illegal Modifications.** Wetland rating categories shall not change due to illegal modifications made by the applicant or with the applicant's knowledge.

3. **Regulated Activities.**

a. For any regulated activity, a critical areas report (see SMC 20.80.110) may be required to support the requested activity.

b. The following activities are regulated if they occur in a regulated wetland or its buffer:

i. The removal, excavation, grading, or dredging of soil, sand, gravel, minerals, organic matter, or material of any kind;

ii. The dumping of, discharging of, or filling with any material;

iii. The draining, flooding, or disturbing of the water level or water table;

iv. Pile driving;

v. The placing of obstructions;

vi. The construction, reconstruction, demolition, or expansion of any structure;

vii. The destruction or alteration of wetland vegetation through clearing, harvesting, shading, intentional burning, or planting of vegetation that would alter the character of a regulated wetland;

viii. "Class IV – General Forest Practices" under the authority of the "1992 Washington State Forest Practices Act Rules and Regulations," WAC 222-12-030, or as thereafter amended; and/or

ix. Activities that result in:

(A) A significant change of water temperature;

(B) A significant change of physical or chemical characteristics of the sources of water to the wetland;

(C) A significant change in the quantity, timing, or duration of the water entering the wetland; and/or

(D) The introduction of pollutants.

c. **Subdivisions.** The subdivision and/or short subdivision of land in wetlands and associated buffers are subject to the following:

i. Land that is located wholly within a wetland or its buffer may not be subdivided; and

ii. Land that is located partially within a wetland or its buffer may be subdivided; provided, that an accessible and contiguous portion of each new lot is:

(A) Located outside of the wetland and its buffer; and

(B) Meets the minimum lot size requirements of SMC Table 20.50.020(1).

d. **Activities Allowed in Wetlands.** The activities listed below are allowed in wetlands. These activities do not require submission of a critical area report, except where such activities result in a loss of the functions and values of a wetland or wetland buffer. These activities include:

i. Those activities and uses conducted pursuant to the Washington State Forest Practices Act and its rules and regulations, WAC 222-12-030, where State law specifically exempts local authority, except those developments requiring local approval for Class 4 – General Forest Practice Permits (conversions) as defined in Chapter 76.09 RCW and Chapter 222-12 WAC.

ii. Conservation or preservation of soil, water, vegetation, fish, shellfish, and/or other wildlife that does not entail changing the structure or functions of the existing wetland.

iii. The harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops and provided the harvesting does not require tilling of soil, planting of crops, chemical applications, or alteration of the wetland by changing existing topography, water conditions, or water sources.

iv. Drilling for utilities/utility corridors under a wetland, with entrance/exit portals located completely outside of the wetland buffer; provided, that the drilling does not interrupt the ground water connection to the wetland or percolation of surface water down through the soil column. Specific studies by a hydrologist are necessary to determine whether the ground water connection to the wetland or percolation of surface water down through the soil column will be disturbed.

v. Enhancement of a wetland through the removal of nonnative invasive plant species. Removal of invasive plant species shall be restricted to hand removal unless permits from the appropriate regulatory agencies have been obtained for approved biological or chemical treatments. All removed plant material shall be taken away from the site and disposed of appropriately. Plants that appear on the Washington State Noxious Weed Control Board list of noxious weeds must be handled and disposed of according to a noxious weed control plan appropriate to that species. Revegetation with appropriate native species at natural densities is allowed in conjunction with removal of invasive plant species.

vi. Educational and scientific research activities.

vii. Normal and routine maintenance and repair of any existing public or private facilities within an existing right-of-way; provided, that the maintenance or repair does not expand the footprint of the facility or right-of-way.

4. **Wetland Buffers.**

a. **Buffer Requirements.** The standard buffer widths in Table 20.230.031 have been established in accordance with the best available science. They are based on the category of wetland and the habitat score as determined by a qualified wetland professional using the Washington State Wetland Rating System for Western Washington.

i. The use of the standard buffer widths requires the implementation of the measures in Table 20.230.032, where applicable, to minimize the impacts of the adjacent land uses.

ii. If an applicant chooses not to apply the mitigation measures in Table 20.230.032, then a 33 percent increase in the width of all buffers is required. For example, a 75-foot buffer with the mitigation measures would be a 100-foot buffer without them.

iii. The standard buffer widths assume that the buffer is vegetated with a native plant community appropriate for the ecoregion. If the existing buffer is unvegetated, sparsely vegetated, or vegetated with invasive species that do not perform needed functions, the buffer should either be planted to create the appropriate plant community or the buffer should be widened to ensure that adequate functions of the buffer are provided.

iv. Additional buffer widths are added to the standard buffer widths. For example, a Category I wetland scoring 32 points for habitat function would require a buffer of 225 feet (75 + 150).

Table 20.230.031 Wetland Buffer Requirements for Western Washington

Wetland Category	Standard Buffer Width	Additional buffer width if wetland scores 21 – 25 habitat points	Additional buffer width if wetland scores 26 – 29 habitat points	Additional buffer width if wetland scores 30 – 36 habitat points
Category I: Based on total score	75 ft	Add 30 ft	Add 90 ft	Add 150 ft
Category I: Forested	75 ft	Add 30 ft	Add 90 ft	Add 150 ft
Category I: Estuarine	150 ft	NA	NA	NA
Category II: Based on score	75 ft	Add 30 ft	Add 90 ft	Add 150 ft
Category III (all)	60 ft	Add 45 ft	Add 105 ft	NA
Category IV (all)	40 ft	NA	NA	NA

Table 20.230.032 Required measures to minimize impacts to wetlands
(Measures are required, where applicable to a specific proposal)

Disturbance	Required Measures to Minimize Impacts
Lights	Direct lights away from wetland.
Noise	Locate activity that generates noise away from wetland. If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source. For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10 ft heavily vegetated buffer strip immediately adjacent to the outer wetland buffer.
Toxic runoff	Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered. Establish covenants limiting use of pesticides within 150 ft of wetland. Apply integrated pest management.
Stormwater runoff	Retrofit stormwater detention and treatment for roads and existing adjacent development.

Table 20.230.032 Required measures to minimize impacts to wetlands

(Measures are required, where applicable to a specific proposal)

Disturbance	Required Measures to Minimize Impacts
	Prevent channelized flow from lawns that directly enters the buffer. Use Low Intensity Development techniques (per PSAT publication on LID techniques).
Change in water regime	Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns.
Pets and human disturbance	Use privacy fencing OR plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion. Place wetland and its buffer in a separate tract or protect with a conservation easement.
Dust	Use best management practices to control dust.
Disruption of corridors or connections	Maintain connections to off-site areas that are undisturbed. Restore corridors.

v. **Increased Wetland Buffer Area Width.** Buffer widths shall be increased on a case-by-case basis as determined by the Administrator when a larger buffer is necessary to protect wetland functions and values. This determination shall be supported by appropriate documentation showing that it is reasonably related to protection of the functions and values of the wetland. The documentation must include, but not be limited to, the following criteria:

(A) The wetland is used by a plant or animal species listed by the Federal government or the State as endangered, threatened, candidate, sensitive, monitored or documented priority species or habitats, or essential or outstanding habitat for those species or has unusual nesting or resting sites such as heron rookeries or raptor nesting trees; or

(B) The adjacent land is susceptible to severe erosion, and erosion-control measures will not effectively prevent adverse wetland impacts; or

(C) The adjacent land has minimal vegetative cover or slopes greater than 30 percent.

vi. Buffer averaging to improve wetland protection may be permitted when all of the following conditions are met:

(A) The wetland has significant differences in characteristics that affect its habitat functions, such as a wetland with a forested component adjacent to a degraded emergent component or a "dual-rated" wetland with a Category I area adjacent to a lower rated area;

(B) The buffer is increased adjacent to the higher functioning area of habitat or more sensitive portion of the wetland and decreased adjacent to the lower functioning or less sensitive portion as demonstrated by a critical areas report from a qualified wetland professional;

(C) The total area of the buffer after averaging is equal to the area required without averaging; and

(D) The buffer at its narrowest point is never less than either three-fourths of the required width or 75 feet for Category I and II, 50 feet for Category III, and 25 feet for Category IV, whichever is greater.

vii. Averaging through a shoreline variance may be permitted when all of the following are met:

(A) There are no feasible alternatives to the site design that could be accomplished without buffer averaging;

(B) The averaged buffer will not result in degradation of the wetland's functions and values as demonstrated by a critical areas report from a qualified wetland professional;

(C) The total buffer area after averaging is equal to the area required without averaging; and

(D) The buffer at its narrowest point is never less than either three-fourths of the required width or 75 feet for Category I and II, 50 feet for Category III and 25 feet for Category IV, whichever is greater.

b. To facilitate long-range planning using a landscape approach, the Administrator may identify and preassess wetlands using the rating system and establish appropriate wetland buffer widths for such wetlands. The Administrator will prepare maps of wetlands that have been preassessed in this manner.

c. **Measurement of Wetland Buffers.** All buffers shall be measured perpendicular from the wetland boundary as surveyed in the field. The buffer for a wetland created, restored, or enhanced as compensation for approved wetland alterations shall be the same as the buffer required for the category of the created, restored, or enhanced wetland. Only fully vegetated buffers will be considered. Lawns, walkways, driveways, and other mowed or paved areas will not be considered buffers or included in buffer area calculations.

d. **Buffers on Mitigation Sites.** All mitigation sites shall have buffers consistent with the buffer requirements of this chapter. Buffers shall be based on the expected or target category of the proposed wetland mitigation site.

e. **Buffer Maintenance.** Except as otherwise specified or allowed in accordance with this chapter, wetland buffers shall be retained in an undisturbed or enhanced condition. In the case of compensatory mitigation sites, removal of invasive nonnative weeds is required for the duration of the mitigation bond (subsection (C)(6)(h)(ii)(A)(8) of this section).

f. **Impacts to Buffers.** Requirements for the compensation for impacts to buffers are outlined in subsection (C)(6) of this section.

g. **Overlapping Critical Area Buffers.** If buffers for two contiguous critical areas overlap (such as buffers for a stream and a wetland), the wider buffer applies.

h. **Allowed Buffer Uses.** The following uses may be allowed within a wetland buffer in accordance with the review procedures of this chapter, provided they are not prohibited by any other applicable law and they are conducted in a manner so as to minimize impacts to the buffer and adjacent wetland:

i. **Conservation and Restoration Activities.** Conservation or restoration activities aimed at protecting the soil, water, vegetation, or wildlife.

ii. **Passive Recreation.** Passive recreation facilities designed and in accordance with an approved critical area report, including:

(A) Walkways and trails; provided, that those pathways are limited to minor crossings having no adverse impact on water quality. They should be generally parallel to the perimeter of the wetland, located only in the outer 25 percent of the wetland buffer area, and located to avoid removal of significant trees. They should be limited to pervious surfaces no more than five feet in width for pedestrian use only. Raised boardwalks utilizing nontreated pilings may be acceptable; and/or

(B) Wildlife viewing structures.

iii. Educational and scientific research activities.

iv. Normal and routine maintenance and repair of any existing public or private facilities within an existing right-of-way; provided, that the maintenance or repair does not increase the footprint or use of the facility or right-of-way.

v. The harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops, and provided the harvesting does not require tilling of soil, planting of crops, chemical applications, or alteration of the wetland by changing existing topography, water conditions, or water sources.

vi. Drilling for utilities/utility corridors under a buffer, with entrance/exit portals located completely outside of the wetland buffer boundary; provided, that the drilling does not interrupt the ground water connection to the wetland or percolation of surface water down through the

soil column. Specific studies by a hydrologist are necessary to determine whether the ground water connection to the wetland or percolation of surface water down through the soil column is disturbed.

vii. Enhancement of a wetland buffer through the removal of nonnative invasive plant species. Removal of invasive plant species shall be restricted to hand removal. All removed plant material shall be taken away from the site and disposed of appropriately. Plants that appear on the Washington State Noxious Weed Control Board list of noxious weeds must be handled and disposed of according to a noxious weed control plan appropriate to that species. Revegetation with appropriate native species at natural densities is allowed in conjunction with removal of invasive plant species.

viii. **Stormwater Management Facilities.** Stormwater management facilities are limited to stormwater dispersion outfalls and bioswales. They may be allowed within the outer 25 percent of the buffer of Category III or IV wetlands only; provided, that:

(A) No other location is feasible;

(B) The location of such facilities will not degrade the functions or values of the wetland; and

(C) Stormwater management facilities are not allowed in buffers of Category I or II wetlands.

ix. **Nonconforming Uses.** Repair and maintenance of nonconforming uses or structures, where legally established within the buffer, provided they do not increase the degree of nonconformity.

i. **Signs and Fencing of Wetlands and Buffers.**

i. **Temporary Markers.** The outer perimeter of the wetland buffer and the clearing limits identified by an approved permit or authorization shall be marked in the field with temporary "clearing limits" fencing in such a way as to ensure that no unauthorized intrusion will occur. The marking is subject to inspection by the Administrator prior to the commencement of permitted activities. This temporary marking shall be maintained throughout construction and shall not be removed until permanent signs, if required, are in place.

ii. **Permanent Signs.** As a condition of any permit or authorization issued pursuant to this chapter, the Administrator may require the applicant to install permanent signs along the boundary of a wetland or buffer.

(A) Permanent signs shall be made of an enamel-coated metal face and attached to a metal post or another nontreated material of equal durability. Signs must be posted at an interval of one per lot or every 50 feet, whichever is less, and must be maintained by the property owner in perpetuity. The signs shall be worded as follows or with alternative language approved by the Administrator:

Protected Wetland Area Do Not Disturb

Contact the City of Shoreline Regarding Uses, Restrictions, and Opportunities for Stewardship

(B) The provisions of subsection (C)(4)(i)(ii)(A) of this section may be modified as necessary to assure protection of sensitive features.

iii. **Fencing.** Fencing installed as part of a proposed activity or as required in this subsection shall be designed so as to not interfere with species migration, including fish runs, and shall be constructed in a manner that minimizes impacts to the wetland and associated habitat.

5. **Critical Area Report for Wetlands.**

a. If the Administrator determines that the site of a proposed development includes, is likely to include, or is adjacent to a wetland, a wetland report, prepared by a qualified professional, shall be required. The expense of preparing the wetland report shall be borne by the applicant.

b. **Minimum Standards for Wetland Reports.** The written report and the accompanying plan sheets shall contain the following information, at a minimum:

i. The name and contact information of the applicant; the name, qualifications, and contact information for the primary author(s) of the wetland critical area report; a description of the proposal; identification of all the local, State, and/or Federal wetland-related permit(s) required for the project; and a vicinity map for the project.

ii. A statement specifying the accuracy of the report and all assumptions made and relied upon.

iii. Documentation of any fieldwork performed on the site, including field data sheets for delineations, rating system forms, baseline hydrologic data, etc.

iv. A description of the methodologies used to conduct the wetland delineations, rating system forms, or impact analyses including references.

v. Identification and characterization of all critical areas, wetlands, water bodies, shorelines, floodplains, and buffers on or adjacent to the proposed project area. For areas off site of the project site, estimate conditions within 300 feet of the project boundaries using the best available information.

vi. For each wetland identified on site and within 300 feet of the project site provide: the wetland rating, including a description of and score for each function, per wetland ratings (subsection (C)(2)(b) of this section); required buffers; hydrogeomorphic classification; wetland acreage based on a professional survey from the field delineation (acreages for on-site portion and entire wetland area including off-site portions); Cowardin classification of vegetation communities; habitat elements; soil conditions based on site assessment and/or soil survey information; and to the extent possible, hydrologic information such as location and condition of

~~inlet/outlets (if they can be legally accessed), estimated water depths within the wetland, and estimated hydroperiod patterns based on visual cues (e.g., algal mats, drift lines, flood debris, etc.). Provide acreage estimates, classifications, and ratings based on entire wetland complexes, not only the portion present on the proposed project site.~~

~~vii. A description of the proposed actions, including an estimation of acreages of impacts to wetlands and buffers based on the field delineation and survey and an analysis of site development alternatives, including a no-development alternative.~~

~~viii. An assessment of the probable cumulative impacts to the wetlands and buffers resulting from the proposed development.~~

~~ix. A description of reasonable efforts made to apply mitigation sequencing pursuant to Mitigation Sequencing (subsection (C)(6)(a) of this section) to avoid, minimize, and mitigate impacts to critical areas.~~

~~x. A discussion of measures, including avoidance, minimization, and compensation, proposed to preserve existing wetlands and restore any wetlands that were degraded prior to the current proposed land-use activity.~~

~~xi. A conservation strategy for habitat and native vegetation that addresses methods to protect and enhance on-site habitat and wetland functions.~~

~~c. An evaluation of the functions of the wetland and adjacent buffer. Include reference for the method used and data sheets.~~

~~d. A copy of the site plan sheet(s) for the project must be included with the written report and must include, at a minimum:~~

~~i. Maps (to scale) depicting delineated and surveyed wetland and required buffers on site, including buffers for off-site critical areas that extend onto the project site; the development proposal; other critical areas; grading and clearing limits; areas of proposed impacts to wetlands and/or buffers (include square footage estimates);~~

~~ii. A depiction of the proposed stormwater management facilities and outlets (to scale) for the development, including estimated areas of intrusion into the buffers of any critical areas. The written report shall contain a discussion of the potential impacts to the wetland(s) associated with anticipated hydroperiod alterations from the project; and~~

~~iii. A depiction of the proposed stormwater management facilities and outlets (to scale) for the development, including estimated areas of intrusion into the buffers of any critical areas. The written report shall contain a discussion of the potential impacts to the wetland(s) associated with anticipated hydroperiod alterations from the project.~~

~~6. **Compensatory Mitigation.**~~

a. **Mitigation Sequencing.** Before impacting any wetland or its buffer, an applicant shall demonstrate that the following actions have been taken. Actions are listed in the order of preference:

i. Avoid the impact altogether by not taking a certain action or parts of an action.

ii. Minimize impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts.

iii. Rectify the impact by repairing, rehabilitating, or restoring the affected environment.

iv. Reduce or eliminate the impact over time by preservation and maintenance operations.

v. Compensate for the impact by replacing, enhancing, or providing substitute resources or environments.

vi. Monitor the required compensation and take remedial or corrective measures when necessary.

b. **Requirements for Compensatory Mitigation.**

i. Compensatory mitigation for alterations to wetlands shall be used only for impacts that cannot be avoided or minimized and shall achieve equivalent or greater biologic functions. Compensatory mitigation plans shall be consistent with Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1), Ecology Publication No. 06-06-011b, Olympia, WA, March 2006 or as revised.

ii. Mitigation ratios shall be consistent with subsection (C)(6)(g) of this section.

iii. Mitigation requirements may also be determined using the credit/debit tool described in "Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington: Operational Draft" (Ecology Publication No. 10-06-011, February 2011, or as revised) consistent with subsection (C)(6)(h) of this section.

c. **Compensating for Lost or Affected Functions.** Compensatory mitigation shall address the functions affected by the proposed project, with an intention to achieve functional equivalency or improvement of functions. The goal shall be for the compensatory mitigation to provide similar wetland functions as those lost, except when either:

i. The lost wetland provides minimal functions, and the proposed compensatory mitigation action(s) will provide equal or greater functions or will provide functions shown to be limiting within a watershed through a formal Washington State watershed assessment plan or protocol; or

ii. Out-of-kind replacement of wetland type or functions will best meet watershed goals formally identified by the City, such as replacement of historically diminished wetland types.

d. **Preference of Mitigation Actions.** Methods to achieve compensation for wetland functions shall be approached in the following order of preference:

i. Restoration (reestablishment and rehabilitation) of wetlands.

ii. Creation (establishment) of wetlands on disturbed upland sites such as those with vegetative cover consisting primarily of nonnative species. This should be attempted only when there is an adequate source of water and it can be shown that the surface and subsurface hydrologic regime is conducive to the wetland community that is anticipated in the design.

iii. Enhancement of significantly degraded wetlands in combination with restoration or creation. Enhancement alone will result in a loss of wetland acreage and is less effective at replacing the functions lost. Enhancement should be part of a mitigation package that includes replacing the impacted area and meeting appropriate ratio requirements.

iv. **Preservation.** Preservation of high quality, at-risk wetlands as compensation is generally acceptable when done in combination with restoration, creation, or enhancement; provided, that a minimum of 1:1 acreage replacement is provided by reestablishment or creation. Preservation of high quality, at-risk wetlands and habitat may be considered as the sole means of compensation for wetland impacts when the following criteria are met:

(A) Wetland impacts will not have a significant adverse impact on habitat for listed fish, or other ESA listed species;

(B) There is no net loss of habitat functions within the watershed or basin;

(C) Mitigation ratios for preservation as the sole means of mitigation shall generally start at 20:1. Specific ratios should depend upon the significance of the preservation project and the quality of the wetland resources lost; and

(D) The impact area is small (generally less than one-half acre) and/or impacts are occurring to a low functioning system (Category III or IV wetland).

All preservation sites shall include buffer areas adequate to protect the habitat and its functions from encroachment and degradation.

e. **Type and Location of Compensatory Mitigation.** Unless it is demonstrated that a higher level of ecological functioning would result from an alternative approach, compensatory mitigation for ecological functions shall be either in kind and on site, or in kind and within the same stream reach, sub-basin, or drift cell (if estuarine wetlands are impacted). Compensatory mitigation actions shall be conducted within the same sub-drainage basin and on the site of the alteration except when all of the following apply:

i. There are no reasonable opportunities on site or within the sub-drainage basin (e.g., on-site options would require elimination of high functioning upland habitat), or opportunities on site or

~~within the sub-drainage basin do not have a high likelihood of success based on a determination of the capacity of the site to compensate for the impacts. Considerations should include: anticipated replacement ratios for wetland mitigation, buffer conditions and proposed widths, available water to maintain anticipated hydrogeomorphic classes of wetlands when restored, proposed flood storage capacity, and potential to mitigate riparian fish and wildlife impacts (such as connectivity);~~

~~ii. Off-site mitigation has a greater likelihood of providing equal or improved wetland functions than the impacted wetland; and~~

~~iii. Off-site locations shall be in the same sub-drainage basin unless:~~

~~(A) Established watershed goals for water quality, flood storage or conveyance, habitat, or other wetland functions have been established by the City and strongly justify location of mitigation at another site; or~~

~~(B) Credits from a State-certified wetland mitigation bank are used as compensation, and the use of credits is consistent with the terms of the bank's certification.~~

~~iv. The design for the compensatory mitigation project needs to be appropriate for its location (i.e., position in the landscape). Therefore, compensatory mitigation should not result in the creation, restoration, or enhancement of an atypical wetland. An atypical wetland refers to a compensation wetland (e.g., created or enhanced) that does not match the type of existing wetland that would be found in the geomorphic setting of the site (i.e., the water source(s) and hydroperiod proposed for the mitigation site are not typical for the geomorphic setting). Likewise, it should not provide exaggerated morphology or require a berm or other engineered structures to hold back water. For example, excavating a permanently inundated pond in an existing seasonally saturated or inundated wetland is one example of an enhancement project that could result in an atypical wetland. Another example would be excavating depressions in an existing wetland on a slope, which would require the construction of berms to hold the water.~~

~~f. **Timing of Compensatory Mitigation.** It is preferred that compensatory mitigation projects be completed prior to activities that will disturb wetlands. At the least, compensatory mitigation shall be completed immediately following disturbance and prior to use or occupancy of the action or development. Construction of mitigation projects shall be timed to reduce impacts to existing fisheries, wildlife, and flora.~~

~~i. The Administrator may authorize a one-time temporary delay in completing construction or installation of the compensatory mitigation when the applicant provides a written explanation from a qualified wetland professional as to the rationale for the delay. An appropriate rationale would include identification of the environmental conditions that could produce a high probability~~

of failure or significant construction difficulties (e.g., project delay lapses past a fisheries window, or installing plants should be delayed until the dormant season to ensure greater survival of installed materials). The delay shall not create or perpetuate hazardous conditions or environmental damage or degradation, and the delay shall not be injurious to the health, safety, or general welfare of the public. The request for the temporary delay must include a written justification that documents the environmental constraints that preclude implementation of the compensatory mitigation plan. The justification must be verified and approved by the City.

g. **Wetland Mitigation Ratios.**

Category and Type of Wetland	**Creation or Reestablishment**	**Rehabilitation**	**Enhancement**	**Preservation**
Category I: Bog, Natural Heritage site	Not considered possible	6:1	Case by case	10:1
Category I: Mature forested	6:1	12:1	24:1	24:1
Category I: Based on functions	4:1	8:1	16:1	20:1
Category II	3:1	6:1	12:1	20:1
Category III	2:1	4:1	8:1	15:1
Category IV	1.5:1	3:1	6:1	10:1

h. **Compensatory Mitigation Plan.** When a project involves wetland and/or buffer impacts, a compensatory mitigation plan prepared by a qualified professional shall be required, meeting the following minimum standards:

- Ratios for rehabilitation and enhancement may be reduced when combined with 1:1 replacement through creation or reestablishment. See Table 1a or 1b, Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance – Version 1 (Ecology Publication No. 06-06-011a, Olympia, WA, March 2006 or as revised).

i. **Wetland Critical Area Report.** A critical area report for wetlands must accompany or be included in the compensatory mitigation plan and include the minimum parameters described in the "Minimum Standards for Wetland Reports" section of this chapter.

ii. **Compensatory Mitigation Report.** The report must include a written report and plan sheets that must contain, at a minimum, the elements listed below. Full guidance can be found

~~in Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1) (Ecology Publication No. 06-06-011b, Olympia, WA, March 2006 or as revised).~~

~~(A) The written report must contain, at a minimum:~~

~~(1) The name and contact information of the applicant; the name, qualifications, and contact information for the primary author(s) of the compensatory mitigation report; a description of the proposal; a summary of the impacts and proposed compensation concept; identification of all the local, State, and/or Federal wetland-related permit(s) required for the project; and a vicinity map for the project;~~

~~(2) Description of how the project design has been modified to avoid, minimize, or reduce adverse impacts to wetlands;~~

~~(3) Description of the existing wetland and buffer areas proposed to be impacted. Include acreage (or square footage), water regime, vegetation, soils, landscape position, surrounding land uses, and functions. Also describe impacts in terms of acreage by Cowardin classification, hydrogeomorphic classification, and wetland rating, based on wetland ratings (subsection (C)(2)(b) of this section);~~

~~(4) Description of the compensatory mitigation site, including location and rationale for selection. Include an assessment of existing conditions: acreage (or square footage) of wetlands and uplands, water regime, sources of water, vegetation, soils, landscape position, surrounding land uses, and functions. Estimate future conditions in this location if the compensation actions are not undertaken (i.e., how would this site progress through natural succession?);~~

~~(5) A description of the proposed actions for compensation of wetland and upland areas affected by the project. Include overall goals of the proposed mitigation, including a description of the targeted functions, hydrogeomorphic classification, and categories of wetlands;~~

~~(6) A description of the proposed mitigation construction activities and timing of activities;~~

~~(7) A discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs (for remaining wetlands and compensatory mitigation wetlands);~~

~~(8) A bond estimate for the entire compensatory mitigation project, including the following elements: site preparation, plant materials, construction materials, installation oversight, maintenance twice per year for up to five years, annual monitoring field work and reporting, and contingency actions for a maximum of the total required number of years for monitoring; and~~

~~(9) Proof of establishment of notice on title for the wetlands and buffers on the project site, including the compensatory mitigation areas.~~

~~(B) The scaled plan sheets for the compensatory mitigation must contain, at a minimum:~~
~~(1) Surveyed edges of the existing wetland and buffers, proposed areas of wetland and/or buffer impacts, location of proposed wetland and/or buffer compensation actions;~~
~~(2) Existing topography, ground-proofed, at two-foot contour intervals in the zone of the proposed compensation actions if any grading activity is proposed to create the compensation area(s). Also existing cross-sections of on-site wetland areas that are proposed to be impacted, and cross-section(s) (estimated one-foot intervals) for the proposed areas of wetland or buffer compensation;~~
~~(3) Surface and subsurface hydrologic conditions, including an analysis of existing and proposed hydrologic regimes for enhanced, created, or restored compensatory mitigation areas. Also, illustrations of how data for existing hydrologic conditions were used to determine the estimates of future hydrologic conditions;~~
~~(4) Conditions expected from the proposed actions on site, including future hydrogeomorphic types, vegetation community types by dominant species (wetland and upland), and future water regimes;~~
~~(5) Required wetland buffers for existing wetlands and proposed compensation areas. Also, identify any zones where buffers are proposed to be reduced or enlarged outside of the standards identified in this chapter;~~
~~(6) A plant schedule for the compensation area, including all species by proposed community type and water regime, size and type of plant material to be installed, spacing of plants, typical clustering patterns, total number of each species by community type, timing of installation; and~~
~~(7) Performance standards (measurable standards reflective of years post-installation) for upland and wetland communities, monitoring schedule, and maintenance schedule and actions by each biennium.~~
~~i. **Buffer Mitigation Ratios.** Impacts to buffers shall be mitigated at a 1:1 ratio. Compensatory buffer mitigation shall replace those buffer functions lost from development.~~

20.230.040 Public access.

Public access to the shoreline is the physical ability of the general public to reach and touch the water's edge and/or the ability to have a view of the water and the shoreline from upland locations. There are a variety of types of public access, such as picnic areas, pathways and trails, promenades, bridges, street ends, ingress and egress, and parking.

A. **Public Access Policies.**

1. Public access provisions should be incorporated into all private and public developments. Exceptions may be considered for the following types of uses:

a. A single-family residence;

b. An individual multifamily structure containing four or less dwelling units; and/or

c. Where deemed inappropriate by the Director.

2. Development uses and activities on or near the shoreline should not impair or detract from the public's visual or physical access to the water.

3. Public access to the shoreline should be sensitive to the unique characteristics of the shoreline and should preserve the natural character and quality of the environment and adjacent wetlands; public access should assure no net loss of ecological functions.

4. Where appropriate, water-oriented public access should be provided as close as possible to the water's edge without adversely affecting a sensitive environment.

5. Except for access to the water, the preferred location for placement of public access trails is as close to the furthest landward edge of the native vegetation zone as practical. Public access facilities should provide auxiliary facilities, such as parking and sanitation, when appropriate, and shall be designed for accessibility by people with disabilities. Publicly owned shorelines should be limited to water-dependent or public recreation uses, otherwise such shorelines should remain protected open space.

6. Public access afforded by public right-of-way street ends adjacent to the shoreline should be preserved, maintained, and enhanced.

7. Public access should be designed to provide for public safety and to minimize potential impacts to private property and individual privacy. This may include providing a physical separation to reinforce the distinction between public and private space, providing adequate space, through screening with landscape planting or fences, or other means.

8. Public views from the shoreline upland areas should be enhanced and preserved. Enhancement of views should not be construed to mean excess removal of vegetation that partially impairs views.

9. Public access facilities should be constructed of environmentally friendly materials and support healthy natural processes, whenever financially feasible and possible.

10. Public access facilities should be maintained to provide a clean, safe experience, and to protect the environment.

B. **Public Access Regulations.**

1. Public access shall be required for all shoreline development and uses, except for a single-family residence or residential projects containing four or less dwelling units.

2. Requirement of public access to shorelines does not confer the right to enter upon or cross private property, except for dedicated and marked public easements.

3. A shoreline development or use that does not provide public access may be authorized provided the applicant demonstrates and the Director determines that one or more of the following provisions apply:

a. Unavoidable health or safety hazards to the public exist that cannot be prevented by any feasible means;

b. Security requirements cannot be satisfied through the application of alternative design features or other solutions;

c. The cost of providing the access, easement, or an alternative amenity is unreasonably disproportionate to the total long-term cost of the proposed development;

d. Unacceptable environmental harm, such as damage to fish spawning areas, will result from the public access that cannot be mitigated; and/or

e. Significant conflict between the proposed access and adjacent uses would occur and cannot be mitigated.

4. The applicant must also demonstrate that all reasonable means to public access have been exhausted, including but not limited to:

a. Regulating access by such means as limiting use to daylight hours;

b. Designing separation of uses and activities with such means as fences, terracing, hedges, or landscaping; and/or

c. Providing access that is physically separated from the proposal, such as a nearby street end, an off-site viewpoint, or a trail system.

5. Public access sites shall be made barrier free for people with disabilities.

6. Public access sites shall be connected directly to the nearest public street.

7. Required public access sites shall be fully developed and available for public use at the time of occupancy or use of the development or activity.

8. Public access easements and permit conditions shall be recorded on the deed where applicable or on the face of a plat or short plat as a condition running with the land. Said recording with the King County Recorder's office shall occur at the time of permit approval. ~~(RCW 58.17.110).~~

9. The standard Washington State approved logo and other approved signs that indicate the public's right of access and hour of access shall be constructed, installed, and maintained by the applicant in conspicuous locations at public access sites. Signs controlling or restricting public access may be approved as a condition of permit approval.

10. Development on or over the water shall be constructed as far landward as possible to avoid interference with views from surrounding properties to the shoreline and adjoining waters.
11. Physical public access shall be designed to prevent significant impacts to natural systems by employing low impact development techniques.

Subchapter 2.
Specific Shoreline Use Policies and Regulations

20.230.070 General.

Specific shoreline use provisions are more detailed than those listed in general policies and regulations. These use policies and regulations apply to the identified use categories and provide a greater level of detail for uses and their impacts. The policies establish the shoreline management principles that apply to each use category and serve as a bridge between the various elements listed in SMC 20.200.040 and the use regulations that follow.

This subchapter also includes those activities that modify the configuration or qualities of the shoreline area. Shoreline modification activities are, by definition, undertaken in support of or in preparation for a permitted shoreline use. Typically, shoreline modification activities relate to construction of a physical element such as a breakwater, dredged basins, landfilling, etc., but they can include other actions such as clearing, grading, application of chemicals, etc. Shoreline modification policies and regulations are intended to prevent, reduce, and mitigate the negative environmental impacts of proposed shoreline modifications consistent with the goals of the Shoreline Management Act. A proposed development must meet all of the regulations for both applicable uses and activities as well as the general and environment designation regulations.

The following policies and regulations apply to specific types of development that may be proposed in the shoreline jurisdiction of the City. A proposal can consist of more than one type of development. In addition, all specific shoreline development must be consistent with the following shoreline environmental designations; the goals and objectives of Chapter 20.200 SMC; ~~and~~ the general policies and regulations contained in Chapter 20.230 SMC, Subchapter 1~~.~~; and the critical areas regulations contained in Chapter 20.240 SMC.

20.230.080 Shoreline environmental designations. ~~— Map included in Appendix D, page 205.~~[1]

Aquatic Environment (A). Encompasses all submerged lands from OHWM to the middle of Puget Sound. The purpose of this designation is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the ordinary high water mark. New over-water structures are allowed only for water-dependent uses, public access, or ecological restoration and must be limited to the minimum necessary to support the structure's intended use.

Urban Conservancy Environment (UC). The purpose of this designation is to protect and restore relatively undeveloped or unaltered shorelines to maintain open space, floodplains, or habitat, while allowing a variety of compatible uses. This designation shall apply to shorelines that retain important ecological functions, even if partially altered. These shorelines are suitable for low intensity development, uses that are a combination of water-related or water enjoyment uses, or uses that allow substantial numbers of people access to the shoreline. Any undesignated shorelines are automatically assigned an urban conservancy designation.

Shoreline Residential Environment (SR). The purpose of this designation is to accommodate residential development and accessory structures that are consistent with this Shoreline Master Program. This designation shall apply to shorelines that do not meet the criteria for urban conservancy and that are characterized by single-family or multifamily residential development or are planned and platted for residential development.

Waterfront Residential Environment (WR). The purpose of this designation is to distinguish between residential portions of the coastline where natural and manmade features preclude building within the shoreline jurisdiction and the section along 27th Avenue NW where residential properties directly abut the Puget Sound.

Characteristics of 27th Avenue NW include:

- Only fully established residential property in the City of Shoreline directly abutting the Puget Sound;
- Substantial number of legally existing nonconforming lots and nonconforming structures;
- Exposure to high energy wind and wave action;
- Fully armored shoreline prior to December 4, 1969, and residences occupied prior to January 1, 1992; and
- Failure of an individual bulkhead would cause adverse effect on subject property as well as neighboring properties.

These unique circumstances and considerations warrant different regulations for 27th Avenue NW as compared to existing residential property that is cut off from the shoreline by bluffs and railroad tracks (UC and SR), and potential new residential properties in the Point Wells designations (PW and PWC).

Point Wells Urban Environment (PW). The purpose of this designation is to accommodate higher density uses while protecting existing ecological functions and restoring ecological functions that have been degraded.

Point Wells Urban Conservancy Environment (PWC). The purpose of this designation is to distinguish between differing levels of potential and existing ecological function within the Point Wells environment, and regulate uses and public access requirements appropriately.

SMC 20.230.081 Permitted Uses and Modifications.

Uses that are allowed in Tables 20.40.120 through 20.40.1650 are permitted uses in accordance with the underlying zone, this chapter, and the provisions of ~~the~~this Shoreline Master Program.

P = Permitted. Permitted uses may require shoreline substantial development permits and any other permits required by the Shoreline Municipal Code and/or other regulatory agencies.

C = Conditional Use. Conditional uses require shoreline conditional use permit and may require other permits required by the Shoreline Municipal Code and/or other regulatory agencies.

X = Prohibited.

Table 20.230.081 Permitted Uses and Modifications within the Shorelines

	Shoreline Environments					
Shoreline Use	**Aquatic**	**Urban Conservancy**	**Shoreline Residential**	**Waterfront Residential**	**PW Urban Conservancy**	**PW Urban**
Agriculture	X	X	X	X	X	X
Aquaculture	C	X	X	X	X	X
Boating Facilities (Boat Hoists and	P[1]	P: Boat launching ramps open to the public	P: Joint use boat launching ramps	P: Joint use boat launching ramps	X	P: Boat launching ramps open to the public

Table 20.230.081 Permitted Uses and Modifications within the Shorelines

	Shoreline Environments					
Shoreline Use	**Aquatic**	**Urban Conservancy**	**Shoreline Residential**	**Waterfront Residential**	**PW Urban Conservancy**	**PW Urban**
Launching Ramps)						
Nonresidential Development	X	X	X	X	P	P
Forest Practices	X	X	X	X	X	X
Industrial Development	X	X	X	X	P: Existing	P: Existing C: Expansion
In-Stream Structures	P[1]	P: Part of a fish habitat enhancement or a watershed restoration project	P: Part of a fish habitat enhancement or a watershed restoration project	P: Part of a fish habitat enhancement or a watershed restoration project	P: Part of a fish habitat enhancement or a watershed restoration project	P: Part of a fish habitat enhancement or a watershed restoration project
Mining	X	X	X	X	X	X
Mooring	P	X	X	X	X	X
Recreation Use (Water-related)	C: Water-dependent only	P	P	P	P: Limit to low intensity uses, passive uses	P
Recreation Facilities	C[9]	P	P	P	P: Limit to low intensity uses, passive uses	P

Table 20.230.081 Permitted Uses and Modifications within the Shorelines

	Shoreline Environments					
Shoreline Use	**Aquatic**	**Urban Conservancy**	**Shoreline Residential**	**Waterfront Residential**	**PW Urban Conservancy**	**PW Urban**
Residential Developments	X	P	P	P	P	P
Signs	X[6]	P	P	P	P	P
Permanent Solid Waste Storage or Transfer Facilities	X	X	X	X	X	X
Transportation Facilities (Roads and Bridges)	X	C	P	P	C	P
Transportation Facilities[3] (Railroads)	P	P	P	P	P	P
Utilities	C	P: Underground facilities C: Aboveground facilities	P: Underground facilities C: Aboveground facilities	P: Underground facilities C: Aboveground facilities	P: Underground facilities C: Aboveground facilities	P: Underground facilities C: Aboveground facilities
Unclassified Uses	C	C	C	C	C	C

Table 20.230.081 Permitted Uses and Modifications within the Shorelines

Shoreline Modifications	Aquatic	Urban Conservancy	Shoreline Residential	Waterfront Residential	PW Urban Conservancy	PW Urban
Breakwaters, Jetties, Groins, and Weirs	C[1]	X	X	X	X	X
Dredging	P[4] C: Related to navigation for PWU	P[4]	P[4]	P[4]	P[4]	P[4]
Dredging Material Disposal	C	P[5]	P[5]	P[5]	P[5]	P[5]
Dune Modification	X	X	X	X	X	X
Piers and Docks	P[1]	P: Public	P: Joint use	P: Joint use	X	P: Existing associated with public use P: Public piers or docks C: Expansion of existing with water oriented industrial use
Structural Flood Hazard Reduction	X	X	X	X	X	X

Table 20.230.081 Permitted Uses and Modifications within the Shorelines

Shoreline Modifications	Aquatic	Urban Conservancy	Shoreline Residential	Waterfront Residential	PW Urban Conservancy	PW Urban
(Dikes and Levees)						
Soft-Shore Stabilization	P[1]	P	P	P	P: With utilities	P
Repair, Replacement, and Maintenance of Existing Hard-Shore Armoring	P	P	P	P[8]	P	P
Hard Shoreline Armoring where None Previously Existed	X	C	C	C	X	C
Land Disturbing Activities	X	P[3]	P[3]	P[3]	P[3]	P[3]
Landfilling	C[4]	C[3]	C[1]	C[1]	C[3]	C[3]
Shoreline Habitat and Natural Systems Enhancement Projects	P	P	P	P	P	P
Marinas	X	X	X	X	X	X

[1] Subject to the use limitations and permit requirements of the abutting upland shoreline environment designation.

[2] The City recognizes the Federal preemption for local permitting per the ICC Termination Act of 1995, 49 U.S.C. § 10501(b); however, for the purposes of coastal zone management consistency the railroad company would be required to comply with the policies of the City of Shoreline's SMP.

[3] For activities associated with shoreline restoration or remediation; or limited if associated with public access improvement and allowed shoreline development.

[4] For activities associated with shoreline or aquatic restoration or remediation.

[5] For shoreline habitat and natural systems enhancement, fish habitat enhancement, or watershed restoration project.

[6] Signs required by regulatory agencies for navigational operation, safety and direction purposes allowed in aquatic environment per SMC 20.230.230(B)(1).

[7] Limited to water-dependent, public access, or shoreline stabilization activities.

[8] This includes replacement.

[9] Refer to SMC 20.230.130 for conditions.

SMC 20.30.082 Native Conservation Area and Building Setbacks.

The term "native conservation area" (NVCA) applies to areas where the shoreline is not armored, such as the PWC environment designation, and Richmond Beach Saltwater Park. NVCAs should be maintained in a predominantly natural, undisturbed, undeveloped, and vegetated condition, except where necessary to accommodate appurtenances to a permitted water-dependent use. The term "building setback" applies in areas where the railroad or bulkheads prohibit natural sediment transfer. In those areas, it is necessary to maintain hard-armored conditions, but further encroachment or vegetative clearing are not permitted. The area is measured horizontally from the OWHM and the structure or use.

Table 20.230.082 Native Conservation Area/Building Setbacks[1]

Shoreline Environmental Designation	**Minimum Native Vegetation Conservation or Building Setback Area[1]**
Urban Conservancy	150 feet or 50 feet from the top of a landslide hazard area, whichever is greater
Shoreline Residential	115 feet

Table 20.230.082 Native Conservation Area/Building Setbacks[1]

Shoreline Environmental Designation	Minimum Native Vegetation Conservation or Building Setback Area[1]
Waterfront Residential	20 feet
Point Wells Urban	200 feet (restoration required as part of development)
Point Wells Urban Conservancy	200 feet

Bulk standards will be regulated by underlying zoning according to SMC Table 20.50.020(1). Zoning designation is R6 for UC, SR, and WR, and yet to be determined for PW and PWC.

~~[1] The term "native conservation area" (NVCA) applies to areas where the shoreline is not armored, such as the PWC environment designation, and Richmond Beach Saltwater Park. NVCAs should be maintained in a predominantly natural, undisturbed, undeveloped, and vegetated condition, except where necessary to accommodate appurtenances to a permitted water-dependent use. The term "building setback" applies in areas where the railroad or bulkheads prohibit natural sediment transfer. In those areas, it is necessary to maintain hard-armored conditions, but further encroachment or vegetative clearing are not permitted.~~

20.230.090 Boating facilities.

Boating facilities serving two or more single-family dwelling units generally include boat launch ramps (public and private), wet and dry boat storage, and related sales and service for pleasure and commercial watercraft. For the purpose of this section, boat hoists, davits, lifts, and/or dry boat storage of private watercraft consistent with single-family residential properties are not included.

A. **Boating Facilities Policies.**

1. Boating facilities can have a significant impact on habitat. The impacts of boating facilities should be reviewed thoroughly before boating facilities are permitted in the shoreline jurisdiction.

2. Public and community boating facilities may be allowed. Individual private facilities are prohibited.

3. New nonresidential boating facilities may be allowed as a conditional use within the regulated shoreline. When allowed, such facilities should be designed to accommodate public access and enjoyment of the shoreline location. Depending on the scale of the facility, public access should include walkways, viewpoints, restroom facilities, and other recreational uses.

4. Dry boat storage should not be considered a water-oriented use. Only boat hoists, boat launch ramps, and access routes associated with a dry boat storage facility should be considered a water-oriented use.

5. Health, safety and welfare considerations must be addressed in application for development of boating facilities.

6. Navigation rights must be protected in development of boating facilities.

7. Extended moorage on waters of the State without a lease or permission is restricted and mitigation of impacts to navigation and access is required.

B. **Boating Facilities Regulations.**

1. Boating facilities may be permitted only if:

a. It can be demonstrated that the facility will not adversely impact fish or wildlife habitat areas or associated wetlands; and

b. Adequate mitigation measures ensure that there is no net loss of the functions or values of the shoreline and habitat as a result of the facility.

2. Boating facilities shall not be permitted within the following marine shoreline habitats because of their scarcity, biological productivity and sensitivity unless no alternative location is feasible, the project would result in a net enhancement of shoreline ecological functions, and the proposal is otherwise consistent with this program:

a. Critical saltwater habitats; and

b. Marshes, estuaries and other wetlands.

3. Preferred ramp designs, in order of priority, are:

a. Open grid designs with minimum coverage of beach substrate;

b. Seasonal ramps that can be removed and stored upland; and

c. Structures with segmented pads and flexible connections that leave space for natural beach substrate and can adapt to changes in beach profile.

4. Ramps shall be placed and maintained near flush with the foreshore slope.

5. Boat launches shall be designed and constructed using methods/technology that have been recognized and approved by State and Federal resource agencies as the best currently available. Rail and track systems shall be preferred over concrete ramps or similar facilities.

6. Launch access for nonmotorized watercraft shall use gravel or other permeable material. Removal of vegetation for launch access should be limited to eight feet in width.

7. Before granting approval of a permit to allow a boat launch ramp, the proponent must satisfactorily demonstrate that:

a. Adequate facilities for the efficient handling of sewage and litter will be provided;

b. The boating facilities will be designed so that structures are aesthetically compatible with or enhance shoreline features and uses; and

c. The boating facilities will be designed so that existing or potential public access along beaches is not blocked or made unsafe, and so that public use of the surface waters is not unduly impaired.

C. **Boat Launch Ramps.**

1. Boat launch ramps shall be located on stable shorelines where water depths are adequate to eliminate or minimize the need for channel maintenance activities.

2. Boat launch ramps may be permitted on accretion shoreforms provided any necessary grading is not harmful to affected resources.

3. Where boat ramps are permitted, parking and shuttle areas shall not be located on accretion shoreforms.

4. Boat launch ramps may be permitted on stable, noneroding banks where the need for shore stabilization structures is minimized.

5. Ramp structures shall be placed near flush with the foreshore slope to minimize the interruption of geohydraulic processes.

6. Boat launch sites that are open to the public shall have adequate restroom facilities operated and maintained in compliance with King County Health District regulations.

D. **Dry Boat Storage.**

1. Dry boat storage shall not be considered a water-oriented use and must comply with the required shoreline environment setback.

2. Only water-dependent aspects of dry boat storage, such as boat hoists and boat launch ramps, may be permitted within shoreline environment setbacks.

3. Boat launch ramps associated with dry boat storage shall be consistent with applicable requirements in this section.

20.230.095 Breakwaters, jetties, groins, and weirs.

A. **Breakwaters, Jetties, Groins and Weirs Policies.**

1. Breakwaters, jetties, groins, and weirs should be permitted only for water-dependent uses and only where mitigated to provide no net loss of shoreline ecological functions and processes.

B. **Breakwaters, Jetties, Groins and Weirs Regulations.**

1. Groins are prohibited except as a component of a professionally designed public beach management program that encompasses an entire drift sector or reach for which alternatives

are infeasible, or where installed to protect or restore shoreline ecological functions or processes.

2. Jetties and breakwaters are prohibited except as an integral component of a professionally designed harbor or port. Where permitted, floating, portable or submerged breakwater structures, or smaller discontinuous structures, are preferred where physical conditions make such alternatives with less impact feasible. Defense works that substantially reduce or block littoral drift and cause erosion of downdrift shores shall not be allowed unless an adequate long-term professionally engineered beach nourishment program is established and maintained.

20.230.100 Nonresidential development.

A. **Nonresidential Development Policies.**

1. Priority of any nonresidential development should be given to water-dependent and water-enjoyment uses. Allowed uses include restaurants that provide a view of the sound to customers, motels and hotels that provide walking areas for the public along the shoreline, office buildings, and retail sales buildings that have a waterfront theme with public access to the beach or water views.

2. Over-the-water nonresidential development shall be prohibited.

3. Nonresidential development should be required to provide on-site physical or visual access to the shoreline, or offer other opportunities for the public to enjoy shorelines of statewide significance. If on-site access cannot be provided, off-site access should be required. Off-site access could be procured through the purchase of land or an easement at a location appropriate to provide the access deemed necessary. Nonresidential developments should include multiple-use concepts such as open space and recreation.

4. Nonresidential development in the shoreline jurisdiction should include landscaping to enhance the shoreline area.

B. **Nonresidential Development Regulations.**

1. Over-water construction of nonresidential uses is prohibited, with the exception of boat facilities necessary for the operation of an associated nonresidential use.

2. All nonresidential development within the shoreline area shall provide for visual and/or physical access to the shoreline by the public. Where on-site public access is feasible, nonresidential development shall dedicate, improve, and provide maintenance for a pedestrian easement that provides area sufficient to ensure usable access to and along the shoreline for the general public. Public access easements shall be a minimum of 25 feet in width and shall

comply with the public access standards contained in the “Public Access” section of this Shoreline Master Program and ~~the Shoreline Development Code~~SMC Title 20.

3. All nonresidential loading and service areas shall be located on the upland side of the nonresidential activity or provisions shall screen the loading and service areas from the shoreline.

4. All nonresidential development within shoreline jurisdiction shall assure no net loss of shoreline ecological functions.

5. A shoreline setback is not required to be maintained for water-dependent nonresidential development.

6. Water-dependent, nonresidential development shall maintain a shoreline setback of either 25 feet from the OHWM or 10 feet from the edge of the base flood elevation, whichever is greater. If public access is provided to the shoreline, the setback may be reduced to 10 feet from the OHWM or the edge of the base flood elevation, whichever is greater.

7. Non-water-dependent nonresidential development shall maintain a minimum setback from the OHWM consistent with Table 20.230.082.

20.230.110 In-stream structures.

A. **In-Stream Structures Policies.**

1. In-stream structures should provide for the protection and preservation of ecosystem-wide processes, ecological functions, and cultural resources including, but not limited to, fish and fish passage, wildlife and water resources, shoreline critical areas, hydrogeological processes, and natural scenic vistas. The location and planning of in-stream structures should give due consideration to the full range of public interests, watershed functions and processes, and environmental concerns, with special emphasis on protecting and restoring priority habitats and species.

2. Nonstructural and nonregulatory methods to protect, enhance, and restore shoreline ecological functions and processes and other shoreline resources should be encouraged as an alternative to structural in-stream structures.

B. **In-Stream Structures Regulations.**

1. Natural in-stream features such as snags, uprooted trees, or stumps should be left in place unless it can be demonstrated that they are actually causing bank erosion or higher flood stages.

2. In-stream structures shall allow for normal ground water movement and surface runoff.

3. In-stream structures shall not impede upstream or downstream migration of anadromous fish.

4. All debris, overburden and other waste materials from construction shall be disposed of in such a manner that prevents their entry into a water body.

20.230.115 Aquaculture.

A. **Aquaculture Policies.**

1. Potential locations for aquaculture are relatively restricted due to specific requirements for water quality, temperature, flows, oxygen content, adjacent land uses, wind protection, commercial navigation, and, in marine waters, salinity. The technology associated with some forms of present-day aquaculture is still in its formative stages and experimental. Therefore, the City recognizes the necessity for some latitude in the development of this use as well as its potential impact on existing uses and natural systems.

2. Aquaculture should not be permitted in areas where it would result in a net loss of ecological functions, adversely impact eelgrass and macroalgae, or significantly conflict with navigation and other water-dependent uses. Aquacultural facilities should be designed and located so as not to spread disease to native aquatic life, establish new nonnative species which cause significant ecological impacts, or significantly impact the aesthetic qualities of the shoreline. Impacts to ecological functions shall be mitigated according to the mitigation sequence described in SMC 20.230.020.

B. **Aquaculture Regulations.**

1. Aquaculture is allowed as a conditional use in the Aquatic environment where it can be located, designed, constructed, and managed to avoid a net loss of ecological functions, not spread diseases to native aquatic life, not adversely impact native eelgrasses and macroalgae species or not significantly conflict with navigation.

2. The supporting infrastructure for aquaculture may be located landward of the aquaculture operation subject to ~~the City's land use code~~SMC Title 20.

3. Aquaculture facilities are required to develop best management practices to minimize impacts from the construction and management of the facilities.

4. New aquatic species that are not previously cultivated in Washington State shall not be introduced into Shoreline's saltwaters or freshwaters without prior written approval of the Director of the Washington State Department of Fish and Wildlife and the Director of the Washington Department of Health. This prohibition does not apply to: Pacific, Olympia, Kumomoto, Belon or Virginica oysters; Manila, Butter, or Littleneck clams; or Geoduck clams.

5. No aquacultural processing, except for the sorting or culling of the cultured organism and the washing or removal of surface materials or organisms, shall be permitted waterward of the ordinary high water mark unless fully contained within a tending boat or barge.

6. Aquaculture wastes shall be disposed of in a manner that will ensure compliance with all applicable governmental waste disposal standards, including but not limited to the Federal Clean Water Act, Section 401, and Chapter 90.48 RCW, Water Pollution Control. No garbage, wastes, or debris shall be allowed to accumulate at the site of any aquaculture operation.

20.230.120 Parking areas.

A. **Parking Area Policies.**

1. Parking in shoreline areas should be minimized.

2. Parking within shoreline areas should directly serve a permitted use on the property.

3. Parking in shoreline areas should be located and designed to minimize adverse impacts including those related to stormwater runoff, water quality, visual qualities, public access, and vegetation and habitat maintenance.

4. Landscaping should consist of native vegetation in order to enhance the habitat opportunities within the shorelines area.

B. **Parking Regulations.** Parking for specific land use activities within the City of Shoreline is subject to the requirements and standards set forth in Chapter 20.50 SMC, Subchapter 6, Parking, Access, and Circulation. In addition, the following parking requirements shall apply to all developments within shorelands:

1. The location of parking areas in or near shoreland areas shall be located outside of the minimum setbacks listed in Table 20.230.082 for the shoreline designation.

2. Parking in the shorelands must directly serve an approved shoreline use.

3. Parking shall be located on the landward side of the development unless parking is contained within a permitted structure. Where there is no available land area on the landward side of the development, parking shall extend no closer to the shoreline than a permitted structure.

4. Landscape screening is required between the parking area and all adjacent shorelines and properties as set forth in Chapter 20.50 SMC, Subchapter 7 Landscaping.

5. The landscape screening for parking areas located within the shoreline areas shall consist of native vegetation, planted prior to final approval of project, which provides effective screening two years after planting. Adequate screening or landscaping for parking lots shall consist of one or more of the following:

a. A strip five feet wide landscaped with trees, shrubs, and/or groundcover;

b. A building or enclosed structure; and/or

c. A strip of land not less than two and one-half feet in width that is occupied by a continuous wall, fence, plant material, or combination of both; which shall be at least three and one-half feet high at time of installation. The plant material shall be evergreen and spaced not more than one and one-half feet on center if pyramidal in shape, or not more than three feet if wider in branching habit. If the plant material is used in conjunction with a wall or fence meeting the minimum height requirements, then said material may be of any kind and spacing. More restrictive screening may be required by Chapter 20.50 SMC, Subchapters 6 and 7. Required parking area screening may be incorporated into general landscaping requirements under Chapter 20.50 SMC, Subchapters 6 and 7.

6. The requirement for screening may be waived by the Director, where screening would obstruct a significant view from public property or public roadway.

7. Parking areas shall not be permitted over the water.

8. Parking as a primary use shall be prohibited within all shoreline environments.

9. Parking or storage of recreational vehicles or travel trailers as a primary use shall be prohibited in all shoreline environments.

20.230.130 Recreational facilities.

Recreational development provides for low impact activities, such as hiking, photography, kayaking, viewing, and fishing, or more intensive uses such as parks. This section applies to both publicly and privately owned shoreline facilities.

A. **Recreational Facilities Policies.**

1. The coordination of local, State, and Federal recreation planning should be encouraged so as to mutually satisfy recreational needs. Shoreline recreational developments should be consistent with all adopted parks, recreation, and open space plans.

2. Parks, recreation areas, and public access points, such as hiking paths, bicycle paths, and scenic drives, should be linked.

3. Recreational developments should be located and designed to preserve, enhance, or create scenic views and vistas.

4. The use of jet-skis and similar recreational equipment should be restricted to special areas. This type of activity should be allowed only where no conflict exists with other uses and wildlife habitat.

5. All recreational developments should make adequate provisions for:

a. Vehicular and pedestrian access, both on site and off site;

b. Proper water, solid waste, and sewage disposal methods;

c. Security and fire protection for the use itself and for any use-related impacts to adjacent private property;

d. The prevention of overflow and trespass onto adjacent properties; and

e. Buffering of such development from adjacent private property or natural areas.

B. **Recreational Facilities Regulations.**

1. Valuable shoreline resources and fragile or unique areas, such as wetlands and accretion shoreforms, shall be used only for low impact and nonstructural recreation activities.

2. For recreation developments that require the use of fertilizers, pesticides, or other chemicals, the property owner shall submit plans demonstrating the methods to be used to prevent these chemical applications and resultant leachate from entering adjacent water bodies. The property owner shall be required to maintain a chemical-free swath at least 100 feet in depth adjacent to water bodies.

3. Recreational facilities shall make adequate provisions, such as screening, buffer strips, fences, and signs, to mitigate nuisance to nearby private properties.

4. No recreational buildings or structures shall be built waterward of the OHWM, except water-dependent and/or water enjoyment structures such as bridges and viewing platforms. Such uses may be permitted as a shoreline conditional use.

5. Proposals for recreational development shall include adequate facilities for water supply, sewage, and garbage disposal.

20.230.140 Residential development.

A. 1. Residential development does not include hotels, motels, or any other type of overnight or transient housing or camping facilities.

2. A shoreline substantial development permit is not required for construction of a single-family residence by an owner, lessee, or contract purchaser for their own use or the use of their family. Single-family residential construction and accessory structures must otherwise conform to this Shoreline Master Program.

3. A shoreline variance or shoreline conditional use permit may be required for residential development for situations specified in ~~the~~this Shoreline Master Program.

4. Uses and facilities associated with residential development, which are identified as separate use activities in this Shoreline Master Program, such as land disturbing activities, are subject to the regulations established for those uses in this section.

B. **Residential Policies.**

1. Public access should be provided in accordance with SMC 20.230.040.

2. Residential development and accessory uses should be prohibited over the water.

3. New subdivisions should be encouraged to cluster dwelling units in order to preserve natural features, minimize physical impacts, and provide for public access to the shoreline.

4. In all new subdivisions and detached single-family developments with four dwelling units, joint use shoreline facilities should be encouraged.

5. Accessory uses and structures should be designed and located to blend into the site as much as possible. Accessory uses and structures should be located landward of the principal residence when feasible.

C. **Residential Regulations.**

1. Residential development is prohibited waterward of the OHWM and within setbacks defined for each shoreline environment designation.

2. Residential development shall assure no net loss of shoreline ecological functions.

3. Residential development shall not be approved if geotechnical analysis demonstrates that flood control or shoreline protection measures are necessary to create a residential lot or site area. Residential development shall be located and designed to avoid the need for structural shore defense and flood protection works.

4. If wetlands or other critical areas are located on the development site, clustering of residential units shall be required in order to avoid impacts to these areas.

5. Storm drainage facilities shall include provisions to prevent the direct entry of uncontrolled and untreated surface water runoff into receiving waters as specified in the Stormwater Manual.

6. Subdivisions and planned unit developments of four waterfront lots/units shall dedicate, improve, and provide maintenance provisions for a pedestrian easement that provides area sufficient to ensure usable access to and along the shoreline for all residents of the development and the general public. When required, public access easements shall be a minimum of 25 feet in width and shall comply with the public access standards in SMC 20.230.040. The design shall conform to the standards in the Engineering Development Manual.

7. Single-family residential development shall maintain a minimum setback from the OHWM consistent with Table 20.230.082.

8. Multifamily residential development shall maintain a minimum setback from the OHWM consistent with Table 20.230.082.

9. One accessory structure to the residence may be placed within the required shoreline setback provided:

a. No accessory structure shall cover more than 200 square feet.

Subchapter 3.
Shoreline Modification Policies and Regulations

20.230.150 General.

Shoreline modification involves developments that provide bank stabilization or flood control. The purpose of the modification is to reduce adverse impacts caused by natural processes, such as current, flood, tides, wind, or wave action. Shoreline modification includes all structural and nonstructural means to reduce flooding and/or erosion of banks.

Nonstructural methods include setbacks of permanent and temporary structures, relocation of the structure to be protected, ground water management, planning, bioengineering or “soft” engineered solutions, and regulatory measures to avoid the need for structural stabilization. “Hard” structural stabilization measures refer to those with solid, hard surfaces, such as concrete bulkheads, while “soft” structural measures rely on natural materials such as biotechnical vegetation or beach enhancement. Generally, the harder the construction measure, the greater the impact on shoreline processes, including sediment transport, geomorphology, and biological functions. New structural shoreline stabilization also often results in vegetation removal, as well as damage to nearshore habitat and shoreline corridors. There are a range of measures varying from soft to hard that include:

- Vegetation enhancement.
- Upland drainage control.
- Biotechnical measures.
- Beach enhancement.
- Anchor trees.
- Gravel placement.
- Rock revetments.
- Gabions.
- Concrete groins.
- Retaining walls and bluff walls.

- Bulkheads.

A. **Shoreline Modification Policies – General.**

1. Biostabilization and other bank stabilization measures should be located, designed, and constructed primarily to prevent damage to the existing primary structure.

2. All new development should be located and designed to prevent or minimize the need for shoreline stabilization measures and flood protection works. New development requiring shoreline stabilization shall be discouraged in areas where no preexisting shoreline stabilization is present.

3. Shoreline modifications are only allowed for mitigation or enhancement purposes, or when and where there is a demonstrated necessity to support or protect an existing primary structure or legally existing shoreline use that is otherwise in danger of loss or substantial damage.

4. Proposals for shoreline modifications should be designed to protect life and property without impacting shoreline resources.

5. Shoreline modifications that are natural in appearance, compatible with ongoing shoreline processes, and provide flexibility for long-term management, such as protective berms or vegetative stabilization, should be encouraged over structural means such as concrete bulkheads or extensive revetments, where feasible.

6. Structural solutions to reduce shoreline damage should be allowed only after it is demonstrated that nonstructural solutions would not be able to withstand the erosive forces of the current and waves.

7. The design of bank stabilization or protection works should provide for the long-term, multiple use of shoreline resources and public access to public shorelines.

8. In the design of publicly financed or subsidized works, consideration should be given to providing pedestrian access to shorelines for low impact outdoor recreation.

9. All flood protection measures should be placed landward of the natural flood boundary, including wetlands that are directly interrelated and interdependent with water bodies.

10. If through construction and/or maintenance of shoreline modification developments, the loss of vegetation and wildlife habitat will occur, mitigation should be required.

11. Existing, previously permitted stabilization measures, such as bulkheads, are considered engineered and abated hazards and shall not be classified as geologic hazard areas.

B. **Shoreline Modification Regulations – General.**

1. All new development, uses or activities within the shoreline area shall be located and designed to prevent or minimize the need for bank stabilization and flood protection works.

2. Permitted and shoreline conditional use requirements for bulkheads and revetments are specified in this chapter. All other forms of shoreline modification, except soft shore, must be approved as a shoreline conditional use within all shoreline environments.

3. All shoreline stabilization proposals require a geotechnical analysis.

4. All shoreline development and activity shall be located, designed, constructed, and managed in a manner that mitigates impacts to the environment. The preferred mitigation sequence (avoid, minimize, mitigate, compensate) shall follow that listed in SMC 20.230.020(A)~~WAC 173-26-201(2)(e)~~.

5. New non-water-dependent development, including single-family residences, that includes structural shoreline stabilization shall not be allowed unless all of the conditions below apply, otherwise new stabilization measures are limited to protecting only existing developments:

a. The need to protect the development from destruction due to erosion caused by natural processes, such as currents and waves, is demonstrated through a geotechnical/hydrogeological report prepared by a City-approved qualified professional.

b. The erosion is not caused by upland conditions, such as the loss of vegetation and/or drainage issues.

c. There will be no net loss of shoreline ecological functions or impacts to adjacent or down-current properties.

d. Nonstructural measures, such as placing the development further from the shoreline, planting vegetation, or installing on-site drainage improvements and soft structural solutions such as bioengineering, are not feasible or not sufficient.

e. The structure will not cause adverse impacts to the functions and values of critical areas or properly functioning conditions for proposed, threatened, and endangered species.

f. Other mitigation/restoration measures are included in the proposal.

6. Upon project completion, all disturbed shoreline areas shall be restored to as near pre-project configuration as possible and replanted with appropriate vegetation. All losses in riparian vegetation or wildlife habitat shall be mitigated at a ratio of 1:1.25 (habitat lost to habitat replaced).

7. Shoreline stabilization and flood protection works are prohibited in wetlands and on point and channel bars. They are also prohibited in fish spawning areas.

8. Developments shall not reduce the volume and storage capacity of streams and adjacent wetlands or flood plains.

9. Use of refuse for the stabilization of shorelines is prohibited.

20.230.160 Dredging and disposal of dredging spoils.

A. **Dredging and Dredge Spoil Policies.**

1. Dredging waterward of the ordinary high water mark for the primary purpose of obtaining fill material is prohibited.

2. Dredging operations should be planned and conducted to minimize interference with navigation; avoid creating adverse impacts on other shoreline uses, properties, and ecological shoreline functions and values; and avoid adverse impacts to habitat areas and fish species.

3. Dredge spoil disposal in water bodies shall be prohibited except for habitat improvement.

4. Dredge spoil disposal on land should occur in areas where environmental impacts will not be significant.

B. **Dredging and Dredge Spoil Regulations.**

1. Dredging and dredge spoil disposal shall be permitted only where it is demonstrated that the proposed actions will not:

a. Result in significant damage to water quality, fish, and other essential biological elements;

b. Adversely alter natural drainage and circulation patterns, currents, or reduce floodwater capacities;

c. Adversely impact properly functioning conditions for proposed, threatened, or endangered species; or

d. Adversely alter functions and values of the shoreline and associated critical areas.

2. Proposals for dredging and dredge spoil disposal shall include all feasible mitigating measures to protect habitats and to minimize adverse impacts such as turbidity; release of nutrients, heavy metals, sulfides, organic materials, or toxic substances; depletion of oxygen; disruption of food chains; loss of benthic productivity; and disturbance of fish runs and/or important localized biological communities.

3. Dredging and dredge spoil disposal shall not occur in wetlands unless for approved maintenance or enhancement associated with a restoration project.

4. Dredging within the shorelines shall be permitted only:

a. For navigational purposes; or

b. For activities associated with shoreline or aquatic restoration or remediation.

5. When dredging is permitted, the dredging shall be the minimum necessary to accommodate the proposed use.

6. Dredging shall utilize techniques that cause minimum dispersal and broadcast of bottom material; hydraulic dredging shall be used wherever feasible in preference to agitation dredging.

7. Dredge material disposal shall be permitted in shoreline jurisdiction only as part of an approved shoreline habitat and natural systems enhancement, fish habitat enhancement or watershed restoration project.

8. Dredged spoil material may be disposed at approved upland sites. If these upland sites are dry lands and fall within shoreline jurisdiction, the disposal of dredge spoils shall be considered landfilling and must be consistent with all applicable provisions of the Master Program. Depositing dredge spoils within the Puget Sound shall be allowed only by shoreline conditional use for one of the following reasons:

a. For wildlife habitat improvements; or

b. To correct problems of material distribution that are adversely affecting fish resources.

9. If suitable alternatives for land disposal are not available or are infeasible, water disposal sites may be permitted by appropriate agencies, provided the sites are determined by the Director to be consistent with the following criteria:

a. Disposal will not interfere with geohydraulic processes;

b. The dredge spoil has been analyzed by a qualified professional and found to be minimally or nonpolluting;

c. Aquatic life will not be adversely affected; and

d. The site and method of disposal meet all requirements of applicable regulatory agencies.

10. Disposal of dredge material shall be done in accordance with the Washington State Department of Natural Resources (DNR) Dredge Material Management Program. DNR manages disposal sites through a site use authorization (SUA); all other required permits must be provided to DNR prior to the DNR issuing a SUA for dredge disposal.

11. The City may impose reasonable limitations on dredge spoil disposal operating periods and hours, and may require buffer strips at land disposal sites.

20.230.170 Piers and docks.

Piers and docks may be allowed in accordance with Table 20.230.081 only when the following conditions are met:

A. The public's need for piers and docks is clearly demonstrated, and the proposal is consistent with protection of the public trust, as embodied in RCW 90.58.020.

B. Avoidance of impacts to critical saltwater habitats by an alternative alignment or location is not feasible, or would result in unreasonable and disproportionate cost to accomplish the same general purpose.

C. The project, including any required mitigation, will result in no net loss of ecological functions associated with critical saltwater habitat.

D. The project is consistent with the State's interest in resource protection and species recovery.

E. Private, noncommercial docks for joint or community use may be authorized; provided, that:

1. Avoidance of impacts to critical saltwater habitats by an alternative alignment or location is not feasible; and

2. The project, including any required mitigation, will result in no net loss of ecological functions associated with critical saltwater habitat.

F. An inventory of the site and adjacent beach sections to assess the presence of critical saltwater habitats and functions is required. The methods and extent of the inventory shall be consistent with accepted research methodology. Proposals will be evaluated using Washington State Department of Ecology technical assistance materials for guidance.

G. Community moorage to serve new development shall be limited to the amount of moorage needed to serve lots with water frontage; provided, that a limited number of upland lots may also be accommodated. Applications for shared moorage shall demonstrate that mooring buoys are not feasible prior to approval of dock moorage.

H. Piers and docks shall be constructed of materials that will not adversely affect water quality or aquatic plants and animals over the long term. Materials used for submerged portions of a pier or dock, decking, and other components that may come in contact with water shall be approved by applicable State agencies for use in water to avoid discharge of pollutants from wave splash, rain, or runoff. At a minimum, piles, floats, or other structural members in direct contact with the water shall be constructed of concrete or steel in accordance with best management practices (BMPs) published by the Washington State Department of Fish and Wildlife (WDFW) and the United States Army Corps of Engineers (USACE), and they shall not be treated or coated with herbicides, fungicides, paint, or pentachlorophenol. Use of arsenate compounds or creosote is prohibited.

I. Pilings used in piers or docks shall have a minimum clearance of two feet above extreme high tide and a maximum clearance of five feet above the OHWM. Floats shall not rest on the substrate.

J. To minimize adverse effects on nearshore habitats and species caused by over-water structures that reduce ambient light levels, the following shall apply:

1. The width of docks, piers, floats, and lifts shall be the minimum necessary, and shall not be wider than six feet;

2. The length of docks and piers shall be the minimum necessary to prevent the grounding of floats and boats on the substrate during low tide;
3. Docks floats or floating docks shall include stops that serve to keep the float bottom off tidelands at low tide;
4. The length and location of docks, piers, floats, and lifts pilings shall be designed using the BMPs as conditioned in the permitting documents approved by WDFW and USACE; and
5. The size of shared docks or piers is limited to 700 square feet for two lots and 1,000 square feet for three or more lots.
K. All new piers or docks must be fully grated. Grating to allow light passage or reflective panels to increase light refraction into the water shall be used on piers, docks, floats and gangways in nearshore areas. Decking shall have a minimum open space of 40 percent and after installation at least 60 percent ambient light beneath the structure shall be maintained.

20.230.175 Pier and dock repair, replacement, or expansion.

A. Existing over-water structures may be repaired and/or replaced in the same location as the existing structure.
B. Repair or replacement of 50 percent or more of an existing over-water deck structure shall include the replacement of the entire decking with grated material to achieve a minimum open space of 40 percent and shall result in at least 60 percent ambient light beneath the structure.
C. Repair or replacement of less than 50 percent of the over-water deck structure shall use grated decking in the area to be replaced. If the cumulative repair in any three-year period exceeds 50 percent, the entire decking shall be replaced to achieve a minimum open space of 40 percent and shall result in at least 60 percent ambient light beneath the structure.
D. Repair or replacement of structural members in contact with the water shall be constructed of concrete or steel in accordance with BMPs published by WDFW and USACE and they shall not be treated or coated with herbicides, fungicides, paint, or pentachlorophenol. Use of arsenate compounds or creosote is prohibited.
E. Expansion of existing over-water structures is prohibited.
F. Other repairs not described in this section to existing legally established structures are considered minor and may be permitted consistent with all applicable regulations.

20.230.180 Bulkheads.

Bulkheads are walls usually constructed parallel to the shore, whose primary purpose is to contain and prevent the loss of soil by erosion, wave, or current action. Bulkheads are typically

constructed of poured-in-place concrete; steel or aluminum sheet piling; wood; or wood and structural steel combinations.

The ~~Washington State~~ Shoreline Management Act only exempts the construction of a normal protective bulkhead associated with an existing single-family residence from the shoreline substantial development permit requirement. However, these structures are required to comply with all the policies and development standards of this Shoreline Master Program.

A. **Bulkhead Policies.**

1. Bulkheads constructed from natural materials, such as protective berms, beach enhancement, or vegetative stabilization, are strongly preferred over structural bulkheads constructed from materials such as steel, wood, or concrete. Proposals for bulkheads should demonstrate that natural methods are unworkable.

2. Bulkheads should be located, designed, and constructed primarily to prevent damage to the existing primary structure. New development that requires bulkheads is not permitted except as specifically provided under this Master Program.

3. Shoreline uses should be located in a manner so that a bulkhead is not likely to become necessary in the future.

4. Bulkheads should not be approved as a solution to geophysical problems such as mass slope failure, sloughing, or landslides. Bulkheads should only be approved for the purposes of preventing bank erosion by the Puget Sound.

B. **Bulkhead Regulations.**

1. New bulkheads may be allowed only when evidence is presented which demonstrates that one of the following conditions exists:

a. Serious erosion threatens an established use or existing primary structure on upland property.

b. Bulkheads are necessary to the operation and location of water-dependent, water-related, or water enjoyment activities consistent with this Shoreline Master Program; provided, that all other alternative methods of shore protection have proven infeasible; and/or

c. A bulkhead is necessary to retain landfilling that has been approved consistent with the provisions of thi<u>s</u>~~e~~ <u>Shoreline</u> Master Program.

2. Proposals for bulkheads must first demonstrate through a geotechnical analysis that use of natural materials and processes and nonstructural or soft structural solutions to bank stabilization are not feasible.

3. The construction of a bulkhead for the primary purpose of retaining landfilling shall be allowed only in conjunction with:

a. A water-dependent use;

b. A bridge or navigational structure for which there is a demonstrated public need and where no feasible upland sites, design solutions, or routes exist; and/or

c. A wildlife or fish enhancement project.

4. Bulkheads shall not be located on shorelines where valuable geohydraulic or biological processes are sensitive to interference. Examples of such areas include wetlands and accretion landforms.

5. Bulkheads are to be permitted only where local physical conditions, such as foundation bearing materials, and surface and subsurface drainage, are suitable for such alterations.

6. If possible, bulkheads shall be located landward of the OHWM and generally parallel to the natural shoreline. In addition:

a. Where no other bulkheads are adjacent, the construction of a bulkhead shall be as close to the eroding bank as possible and in no case shall it be more than three feet from the toe of the bank;

b. A bulkhead for permitted landfilling shall be located at the toe of the fill; and

c. Where permitted, a bulkhead must tie in flush with existing bulkheads on adjoining properties, except where the adjoining bulkheads extend waterward of the base flood elevation, the requirements set forth in this section shall apply.

7. Replacement bulkheads may be located immediately waterward of the bulkhead to be replaced such that the two bulkheads will share a common surface, except where the existing bulkhead has not been backfilled or has been abandoned and is in serious disrepair. In such cases, the replacement bulkhead shall not encroach waterward of the OHWM or existing structure unless the residence was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns.

8. All bulkhead proposals require a geotechnical report prepared by a qualified professional. Bulkheads shall be sited and designed as recommended in approved geotechnical reports. For the waterfront residential environment designation, one geotechnical report could be prepared for multiple properties.

9. When a bulkhead is required at a public access site, provision for safe access to the water shall be incorporated into bulkhead design.

10. Bulkheads shall be designed for the minimum dimensions necessary to adequately protect the development.

11. Stairs or other permitted structures may be built into a bulkhead but shall not extend waterward of the bulkhead, unless they are retractable or removable.

12. Bulkheads shall be designed to permit the passage of surface or ground water without causing ponding or saturation of retained soil/materials.

13. Adequate toe protection consisting of proper footings, a fine retention mesh, etc., shall be provided to ensure bulkhead stability without relying on additional riprap.

14. Materials used in bulkhead construction shall meet the following standards:

a. Bulkheads shall utilize stable, nonerodible, homogeneous materials such as concrete, wood, and rock that are consistent with the preservation and protection of the ecological habitat;

b. Dredge spoils shall not be used for fill behind bulkheads, except clean dredge spoil from a permitted off-site dredge and fill operation; and

c. Backfill and wave returns to stabilize bulkheads are permitted.

20.230.190 Revetment.

A revetment is a sloped shoreline structure built to protect an existing eroding shoreline or newly placed fill against currents. Revetments are most commonly built of randomly placed boulders (riprap) but may also be built of sand cement bags, paving or building blocks, gabions (rock filled wire baskets), or other systems and materials. The principal features of a revetment, regardless of type, is a heavy armor layer, a filter layer, and toe protection.

A. **Revetment Policies.**

1. The use of armored structural revetments should be limited to situations where it is determined that nonstructural solutions such as bioengineering, setbacks, buffers or any combination thereof, will not provide sufficient shoreline stabilization.

2. Revetments should be designed, improved, and maintained to provide public access whenever possible.

B. **Revetment Regulation.**

1. The proposed revetment shall be designed by a qualified professional engineer.

2. Design of revetments shall include and provide improved access to public shorelines whenever possible.

3. When permitted, the location and design of revetments shall be determined using engineering principles, including guidelines of the U.S. Soil Conservation Service and the U.S. Army Corps of Engineers.

4. Armored revetment design shall meet the following design criteria:

a. The size and quantity of the material shall be limited to only that necessary to withstand the estimated energy intensity of the hydraulic system;

b. Filter fabric must be used to aid drainage and help prevent settling;

c. The toe reinforcement or protection must be adequate to prevent a collapse of the system from scouring or wave action; and

d. Fish habitat components, such as large boulders, logs, and stumps, shall be considered in the design subject to a Hydraulic Project Approval by the Washington State Department of Fish and Wildlife.

20.230.200 Land disturbing activities.

A. **Land Disturbing Activity Policies.**

1. Land disturbing activities should only be allowed in association with a permitted shoreline development.

2. Land disturbing activities should be limited to the minimum necessary to accommodate the shoreline development or a landscape plan developed in conjunction with the shoreline development.

3. Erosion shall be prevented and sediment shall not enter waters of the State.

B. **Land Disturbing Activity Regulations.**

1. All land disturbing activities shall only be allowed in association with a permitted shoreline development.

2. All land disturbing activities shall be limited to the minimum necessary for the intended development, including any clearing and grading approved as part of a landscape plan. Clearing invasive, nonnative shoreline vegetation listed on the King County Noxious Weed List is permitted in the shoreline area with an approved clearing and grading permit provided best management practices are used as recommended by a qualified professional, and native vegetation is promptly reestablished in the disturbed area.

3. Tree and vegetation removal shall be prohibited in required native vegetation conservation areas, except as necessary to restore, mitigate or enhance the native vegetation by approved permit as required in these areas.

4. All significant trees in the native vegetation conservation areas shall be designated as protected trees consistent with SMC 20.50.330 and removal of hazard trees must be consistent with SMC 20.50.310(A)(1).

5. All shoreline development and activities shall use measures identified in the 2014 Department of Ecology Stormwater Management Manual for Western Washington, or as revised. Stabilization of exposed surfaces subject to erosion along shorelines shall, whenever feasible, utilize soil bioengineering techniques.

6. For extensive land disturbing activities that require a permit, a plan addressing species removal, revegetation, irrigation, erosion and sedimentation control, and other methods of shoreline protection should be required.

20.230.210 Landfilling.

A. **Landfilling Policies.**

1. The perimeter of landfilling should be designed to avoid or eliminate erosion and sedimentation impacts, during both initial landfilling activities and over time.

2. Where permitted, landfilling should be the minimum necessary to provide for the proposed use and should be permitted only when conducted in conjunction with a specific development proposal that is permitted by ~~the~~this Shoreline Master Program. Speculative landfilling activity should be prohibited.

B. **Landfilling Regulations.**

1. Landfilling activities shall only be permitted in conjunction with a specific development. Landfilling may be permitted as a shoreline conditional use for any of the following:

a. In conjunction with a water-dependent use permitted under this Shoreline Master Program; and/or

b. In conjunction with a bridge, utility, or navigational structure for which there is a demonstrated public need and where no feasible upland sites, design solutions, or routes exist.

2. Pier or pile supports shall be utilized in preference to landfilling. Landfilling for approved road development in floodways or wetlands shall be permitted only if pile or pier supports are proven structurally infeasible.

3. Landfilling shall be permitted only where it is demonstrated that the proposed action will not:

a. Result in significant damage to water quality, fish, and/or wildlife habitat; or

b. Adversely alter natural drainage and current patterns or significantly reduce floodwater capacities.

4. Where landfilling activities are permitted, the landfilling shall be the minimum necessary to accommodate the proposed use.

5. Landfilling from dredging and dredge material disposal shall be done in a manner that avoids or minimizes significant ecological impacts. Impacts that cannot be avoided shall be mitigated in a manner that assures no net loss of shoreline ecological functions.

6. Dredging waterward of the OHWM for the primary purpose of obtaining fill material shall not be allowed, except when the material is necessary for the restoration of shoreline ecological

functions. When allowed, the site where the fill is to be placed must be located waterward of the OHWM.

7. Landfilling shall be designed, constructed, and maintained to prevent, minimize, and control all material movement, erosion, and sedimentation from the affected area. Landfilling perimeters shall be designed and constructed with silt curtains, vegetation, retaining walls, or other mechanisms to prevent material movement. In addition, the sides of the landfilling shall be appropriately sloped to prevent erosion and sedimentation, during both the landfilling activities and afterwards.

8. Fill materials shall be clean sand, gravel, soil, rock, or similar material. Use of polluted dredge spoils and sanitary landfilling materials are prohibited. The property owner shall provide evidence that the material has been obtained from a clean source prior to fill placement.

9. Landfilling shall be designed to allow surface water penetration into aquifers, if such conditions existed prior to the fill.

20.230.230 Signs.

A. **Sign Policies.** Signs should be designed and placed so that they are compatible with the natural quality of the shoreline environment and adjacent land and water uses.

B. **Sign Regulations.** Signs within the City, including the shoreline area, are subject to the requirements and standards specified in Chapter 20.50 SMC, Subchapter 8. Signs are based on the underlying zoning. In addition, the following sign requirements shall apply to signs within shoreline areas:

1. Signs shall only be allowed in or over water for navigation purposes; at road or railroad crossings as necessary for operation, safety and direction; or as related and necessary to a water-dependent use.

2. Signs are permitted in all shoreline environments upland of the OHWM. These sign standards supplement the provisions of SMC 20.50.530 to 20.50.610. Where there is a conflict, the provisions herein shall apply.

C. **Prohibited Signs.**

1. All prohibited signs per SMC 20.50.550.

2. Balloons, any inflatable signs, or inflatable objects used to aid in promoting the sale of products, goods, services, events, or to identify a building.

3. Searchlights and beacons.

4. Electronic reader boards or changing message signs.

5. Neon signs.

6. Pole signs.

7. Backlit awnings used as signs.

8. Internally illuminated signs, except as allowed in subsection (D)(1) of this section.

9. Signs that impair visual access from public viewpoints in view corridors are prohibited in all shoreline environments.

D. **Illumination of Signs.**

1. Illumination of signs is only allowed as permitted by the underlying zoning.

2. Internal illumination of signs is only allowed with light provided by LED or other Energy Star rated luminaires, and is limited to:

a. Opaque cabinet signs where light only shines through the letters, not including symbols, images, or background; or

b. Shadow lighting, where letters are backlit, but light only shines through the edges of the letters.

3. All externally illuminated signs shall shield nearby properties from direct lighting. Light source must be within a maximum of six feet from the sign display, and limited to LED or other Energy Star rated luminaires.

4. No commercial sign shall be illuminated after 11:00 p.m. unless the commercial enterprise is open for business, and then may remain on only as long as the business is open.

5. The light from any illuminated sign shall be shaded, shielded or directed so that the light intensity or brightness shall not adversely affect:

a. Surrounding or facing premises;

b. Safe vision of operators of vehicles on public or private roads, highways, or parking areas; or

c. Safe vision of pedestrians on a public right-of-way.

6. Light from any sign shall not shine on, nor directly reflect into, residential structures, lots, or the water.

7. These provisions shall not apply to:

a. Lighting systems owned or controlled by any public agency for the purpose of directing or controlling navigation, traffic, and highway or street illumination;

b. Aircraft warning lights;

c. Temporary lighting used for repair or construction as required by governmental agencies; or

d. Temporary use of lights or decorations relating to religious or patriotic festivities.

20.230.240 Stormwater management facilities.

A. **Stormwater Management Facilities Policies.**

1. Stormwater facilities located in the shoreland area should be maintained only to the degree necessary to ensure the capacity and function of the facility, including the removal of nonnative, invasive plant species.

2. The stormwater facility should be planted with native vegetation.

B. **Stormwater Management Facility Regulations.**

1. New stormwater facilities shall be located so as not to require any shoreline protection works.

2. Stormwater facility development shall include public access to the shoreline, trail systems, and other forms of recreation, providing such uses will not unduly interfere with stormwater facility operations, endanger the public health, safety, and welfare, or create a significant and disproportionate liability for the owner.

3. Construction of stormwater facilities in shoreland areas shall be timed to avoid fish and/or wildlife migratory and spawning periods.

20.230.250 Transportation.

Transportation facilities are those structures and developments that aid in land and water surface movement of people, goods, and services. They include roads and highways, bridges and causeways, bikeways, trails, railroad facilities, and boat and floatplane terminals.

A. **Transportation Policies.**

1. New roads within the shoreline area should be minimized.

2. Roads and railroad locations should be planned to fit the topographical characteristics of the shoreline such that alteration of natural conditions is minimized.

3. Pedestrian and bicycle trails should be encouraged.

4. When existing transportation corridors are abandoned they should be reused for water-dependent use or public access.

5. Alternatives to new roads or road expansion in the shoreline area should be considered as a first option.

6. Joint use of transportation corridors within shoreline jurisdiction for roads, utilities, and motorized forms of transportation should be encouraged.

7. New roads should be designed to accommodate bicyclists, pedestrians and transit, where feasible.

B. **Transportation Regulations.**

1. Transportation facilities and services shall utilize existing transportation corridors wherever possible, provided the shoreline is not adversely impacted and the development is otherwise consistent with this Shoreline Master Program.
2. Transportation and primary utilities shall jointly use rights-of-way.
3. Landfilling activities for transportation facility development are prohibited in wetlands and on accretion beaches, except when all structural and upland alternatives have proven infeasible, and the transportation facilities are necessary to support uses consistent with this Shoreline Master Program.
4. Major new roads and railways shall avoid being located in the shoreline jurisdiction to the extent practical. These roads shall cross shoreline areas by the shortest, most direct route, unless this route would cause more damage to the environment.
5. New transportation facilities shall be located and designed to minimize or prevent the need for shoreline modification.
6. All bridges must be built high enough to allow the passage of debris, and provide three feet of clearance above the base flood elevation.
7. Shoreline transportation facilities shall be located and designed to avoid steep or unstable areas and fit the existing topography in order to minimize cuts and fills.
8. Bridge abutments and necessary approach fills shall be located landward of the OHWM, except bridge piers may be permitted in a water body as a shoreline conditional use.

20.230.260 Unclassified uses and activities.

In the event that a proposed shoreline use or activity is not identified or classified in this Shoreline Master Program, the following regulation shall apply.

A. Regulations. All uses and activities proposed in the shoreline area that are not classified by provisions in this Shoreline Master Program shall require a shoreline conditional use permit.

20.230.270 Utilities.

Primary utilities include substations, pump stations, treatment plants, sanitary sewer outfalls, electrical transmission lines greater than 55,000 volts, water, sewer or storm drainage mains greater than eight inches in diameter, gas and petroleum transmission lines, and submarine telecommunications cables. Accessory utilities include local public water, electric, natural gas distribution, public sewer collection, cable and telephone service, and appurtenances.

A. **Utility Policies.**

1. Utilities should utilize existing transportation and utility sites, rights-of-way, and corridors whenever possible. Joint use of rights-of-way and corridors should be encouraged.
2. Unless no other feasible alternative exists, utilities should be prohibited in the shoreline jurisdiction, wetlands, and other critical areas. There shall be no net loss of ecological functions or significant impacts to other shoreline resources or values.
3. New utility facilities should be located so as not to require extensive shoreline modifications.
4. Whenever possible, utilities should be placed underground or alongside or under bridges.
5. Solid waste disposal activities and facilities should be prohibited in shoreline areas.

B. **Utility Regulations.**

1. Utility development shall provide for compatible, multiple use of sites and rights-of-way when practical.
2. Utility development shall include public access to the shoreline, trail systems, and other forms of recreation, providing such uses will not unduly interfere with utility operations, endanger the public health, safety, and welfare, or create a significant and disproportionate liability for the owner.
3. The following primary utilities, which are not essentially water-dependent, may be permitted as a shoreline conditional use if it can be shown that no reasonable alternative exists:

a. Water system treatment plants;
b. Sewage system lines, interceptors, pump stations, and treatment plants;
c. Electrical energy generating plants, substations, lines, and cables; or
d. Petroleum and gas pipelines.

4. New solid waste disposal sites and facilities are prohibited.
5. New utility lines including electricity, communications, and fuel lines shall be located underground, except where the presence of bedrock or other obstructions make such placement infeasible.
6. Transmission and distribution facilities shall cross shoreline areas by the shortest, most direct route feasible, unless such route would cause increased environmental damage.
7. Utilities requiring withdrawal of water shall be located only where minimum flows as established by the Washington State Department of Fish and Wildlife can be maintained.
8. Utilities shall be located and designated so as to avoid the use of any structural or artificial shoreline modification.
9. All underwater pipelines are prohibited. If no other alternative exists, a shoreline conditional use permit is required.

Chapter 20.240
SMP Critical Areas Regulations

Sections:

Subchapter 1. Critical Areas – General Provisions

Subchapter 1.

Critical Areas – General Provisions

20.240.010 Purpose.

A. The purpose of this chapter is to establish supplemental standards for the protection of critical areas and their associated buffers within the shoreline jurisdiction consistent with the goals and policies of the SMA.

B. The provisions of this chapter do not extend beyond the shoreline jurisdiction limits specified in the City's Master Program and the SMA.

C. By identifying and regulating development and alterations to critical areas and buffers within the shoreline jurisdiction it is the intent of this chapter to:

1. Protect the public from injury, loss of life, property damage or financial losses due to flooding, erosion, landslide, seismic events, or soils subsidence;

2. Protect unique, fragile and valuable elements of the environment;

3. Reduce cumulative adverse environmental impacts to water quality, wetlands, streams, and other aquatic resources, fish and wildlife habitat, landslide hazards, and other geologically unstable features and protect the functions and values of critical areas from overall net loss;

4. Ensure the long-term protection of ground and surface water quality;

5. Alert members of the public, including appraisers, assessors, owners, potential buyers, or lessees, to the development limitations of critical areas and their required buffers;

6. Serve as a basis for exercise of the City's substantive authority under the State Environmental Policy Act (SEPA), chapter 43.31C RCW, and the City's Environmental Procedures (chapter 20.30 SMC, Subchapter 8);

7. To comply with the requirements of the Shoreline Management Act, chapter 90.58 RCW, and its implementing regulations;

8. Establish standards and procedures that are intended to protect critical areas and their associated buffers within the shoreline jurisdiction while accommodating the rights of property owners to use their property in a reasonable manner; and

9. Provide for the management of critical areas and buffers within the shoreline jurisdiction so as not to result in a net loss of ecological functions and to restore degraded ecosystems.

D. This chapter is to be administered with flexibility and attention to site-specific characteristics.

E. For the purpose of this chapter, critical areas and buffers shall have the same meanings as set forth in SMC 20.20 and RCW 36.70A.030(5).

F. For the purpose of this chapter, when referring to "functions and values" or "functions," it is the critical area's functions and values in relationship to the shoreline ecological functions.

20.240.015 Applicability.

A. Unless explicitly exempted, the provisions of this chapter shall apply to all land uses, development activity, and all structures and facilities within critical areas and buffers located within the City's shoreline jurisdiction, whether or not a permit or authorization is required, and shall apply to every person or entity that owns, lease, or administers land within the City's shoreline jurisdiction.

B. No person or entity shall alter a critical area of buffer in the shoreline jurisdiction except in compliance with the requirements of this chapter.

B. The City shall not approve any permit or otherwise issue any authorization to alter the condition of any land, water, or vegetation or to construct or alter any structure or improvement in the shoreline jurisdiction without first assuring compliance with the requirements of this chapter.

C. Approval of a permit or development proposal pursuant to the provisions of this chapter does not discharge the obligation of the applicant to comply with the provisions of this chapter.

D. The provisions of this chapter shall apply to any forest practices over which the City has jurisdiction pursuant to Chapter 76.09 RCW and WAC Title 222.

20.240.020 Relationship to other regulations.

A. These critical area regulations shall apply as an overlay in addition to use and development regulations established by the City of Shoreline consistent with the SMA and this Master Program. In the event of any conflict between these regulations and any other regulations of the City, the regulations which provide greater protection to the critical areas shall apply.

B. Areas characterized by particular critical areas may also be subject to other regulations established by this chapter due to the overlap or multiple functions of some critical areas. In the event of any conflict between regulations for particular critical areas in this chapter, the regulations which provide greater protection to critical areas shall apply.

C. These critical areas regulations shall apply concurrently with review conducted under the State Environmental Policy Act (SEPA), as necessary and locally adopted. Any conditions required pursuant to this chapter shall be included in the SEPA review and threshold determination.

D. Compliance with the provisions of this chapter does not constitute compliance with other Federal, State, and local regulations and permit requirements that may be required (for example, shoreline substantial development permits, Hydraulic Permit Act (HPA) permits, Section 106 of the National Historic Preservation Act, U.S. Army Corps of Engineers Section 404 permits, National Pollution Discharge Elimination System permits). The applicant is responsible for complying with these requirements, apart from the process established in this chapter.

20.240.025 Critical areas maps.

A. The approximate location and extent of identified critical areas within the City's planning area are shown on the critical areas maps adopted as part of this chapter, including but not limited to the maps identified in SMC 20.240.222, 20.240.272 and 20.240.322. These maps shall be used for informational purposes as a general guide only for the assistance of property owners and other interested parties. Boundaries and locations indicated on the maps are generalized. Critical areas and their buffers may occur within the shoreline jurisdiction which have not previously been mapped. A site inspection by staff or an applicant's critical area worksheet may also indicate the presence of a critical area.

B. Based on an indicated critical area in subsection A of this section, the actual presence or absence, delineation and classification of critical areas shall be identified in the field by a qualified professional, and confirmed by the City, according to the procedures, definitions and criteria established by SMC 20.240.080(D)(1) and (2). In the event of any conflict between the critical area location or designation shown on the City's maps and the criteria or standards of this chapter, the criteria and standards of this chapter shall prevail.

C. The critical areas maps shall be periodically updated by the City and shall reflect any permit activity, results of special studies and reports reviewed and approved by the City, amendments to the Comprehensive Plan Natural Environment Element, and Department-identified errors and corrections.

20.240.040 Allowed activities.

A. **Critical Area Report.** Activities allowed under this section shall have been reviewed and permitted or approved by the City and any other agency with jurisdiction, but do not require submittal of a separate critical area report, unless such submittal was required previously for the underlying permit. The Director may apply conditions to the underlying permit or approval to ensure that the allowed activity is consistent with the provisions of this chapter to protect critical areas.

B. **Best Management Practices.** All allowed activities shall be conducted using the best management practices that result in the least amount of impact to the critical areas. Best management practices shall be used for tree and vegetation protection, construction management, erosion and sedimentation control, water quality protection, and regulation of chemical applications. The City shall require the use of best management practices to ensure that the activity does not result in degradation to the critical area. Any incidental damage to, or alteration of, a critical area shall be restored, rehabilitated, or replaced at the responsible party's expense.

C. **Allowed Activities.** The following activities are allowed:

1. **Modifications to Existing Structures within Critical Areas.** Structural modification of, addition to, maintenance, repair, or replacement of legally nonconforming structures consistent with SMC 20.220.150, which do not meet the building setback or buffer requirements for wetlands, fish and wildlife habitat conservation areas, or geologic hazard areas if the modification, addition, replacement or related activity does not increase the existing building footprint of the structure or area of hardscape lying within the critical area or buffer. Within landslide hazard areas, additions that add height to a nonconforming structure may only be allowed with review of a critical area report demonstrating that no increased risk of the hazard will occur. If such modification, alteration, repair, or replacement requires encroachment into a critical area or a critical area buffer to perform the work, then encroachment may be allowed subject to restoration of the area of encroachment to a same or better condition.

2. **Demolition.** Demolition of structures located within critical areas or their buffers, excluding demolition of structures necessary to support or stabilize landslide hazard areas, and subject to approval of a stormwater pollution prevention plan consistent with the adopted stormwater manual and clearing limits that will adequately protect the critical area.

3. **Permit Requests Subsequent to Previous Critical Area Review.** A permit or approval sought as part of a development proposal for which multiple permits are required is exempt from the provisions of this chapter, except for the notice to title provisions, as applicable if:

a. The City of Shoreline has previously reviewed all critical areas on the site; and

b. There is no material change in the development proposal since the prior review; and

c. There is no new information available which may alter previous critical area review of the site or a particular critical area; and

d. The permit or approval under which the prior review was conducted has not expired or, if no expiration date, no more than five years have lapsed since the issuance of that permit or approval; and

e. The prior permit or approval, including any conditions, has been complied with.

20.240.045 Critical areas preapplication meeting.

A. A preapplication meeting, pursuant to SMC 20.30.080, is required prior to submitting an application for development or use of land that may impact critical areas or buffers within the shoreline jurisdiction.

B. A determination may be provided through the preapplication meeting regarding whether critical area reports are required, and if so what level of detail and what elements may be necessary for the proposed project. An applicant may submit a critical area delineation and classification study prior to the City determining that a full critical area report is required.

This determination does not preclude the Director from requiring additional critical area report information during the review of the project. After a site visit and review of available information for the preapplication meeting, the Director may determine:

1. **No Critical Areas Present.** If the Director's analysis indicates that the project area is not within or adjacent to a critical area or buffer and that the proposed activity is unlikely to result in a net loss of shoreline ecological functions provided by the critical area or buffer, then the Director shall determine that the critical area review is complete and note in the preapplication meeting summary letter the reasons that no further review is required.

2. **Critical Areas Present, But No Impact.** If the Director determines that there are critical areas within or adjacent to the project area, but that the best available science shows that the proposed activity is unlikely to result in a net loss of shoreline ecological functions provided by the critical area or buffer, the Director may waive the requirement for a critical area report. A waiver may be granted if there is substantial evidence that all of the following requirements will be met:

a. There will be no alteration of the critical area or buffer;

b. The development proposal will not impact the critical area in a manner contrary to the purpose, intent, and requirements of this chapter, the City's Master Program, and the SMA; and

c. The proposal is consistent with other applicable regulations and standards.

A summary of this analysis and the findings shall be included in the preapplication meeting summary letter and any staff report or decision on the underlying permit.

3. **Critical Areas May Be Affected by Proposal.** If the Director determines that a critical area(s) or buffer(s) may be affected by the proposal, then the Director shall notify the applicant that a critical area report(s) shall be submitted prior to further review of the project, and indicate each of the critical area types that should be addressed in the report. Additionally, the Director may indicate the sections or report types that shall be included in the critical report(s) consistent with SMC 20.240.080.

20.240.050 Alteration of critical areas.

In general, critical areas and buffers shall be maintained in their existing state including undisturbed, native vegetation to maintain the functions, values, resources, and public health and safety for which the critical areas and buffers are protected or allowed as the current, developed legally established condition such as graded areas, structures, pavement, gardens and lawns. Alteration of critical areas, including their established buffers, may only be permitted subject to the criteria and standards in this chapter, and compliance with any Federal and/or State permits required. Unless otherwise provided in this chapter, if alteration of the critical area is unavoidable, all adverse impacts to or from critical areas and buffers resulting from a development proposal or alteration shall be mitigated using the best available science in

accordance with an approved critical areas report, so as to result in no overall net loss of shoreline ecological function provided by the critical area and no increased risk of hazards.

20.240.053 Mitigation requirements.

Mitigation shall ensure that each permitted development or use will not cause a net loss of ecological functions of the shoreline as provided by the critical area or buffer and to prevent risk from a hazard posed by a critical area. Mitigation shall not be implemented until after the Director has provided approval of a critical areas report that includes a mitigation plan.

A. **Mitigation Sequencing.** This section applies to mitigation required with all critical areas reviews, approvals, and enforcement pursuant to this chapter. This section is supplemented with specific measures under subchapters for particular critical areas. Mitigation for specific development proposals may include a combination of the measures below and shall be designed and constructed in accordance with the provisions of this section. Before impacting any critical areas or buffers, an applicant shall demonstrate that the following actions have been taken in the following sequential order of preference:

1. Avoiding the impact altogether by not taking a certain action or parts of actions;

2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps, such as project redesign, relocation, or timing, to avoid or reduce impacts;

3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment or by restoring or stabilizing the hazard area through natural, engineering, or other methods;

4. Reducing or eliminating the impact over time through preservation and maintenance operations during the life of the action;

5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or

6. Monitoring, measuring and reporting the impact to the Director and taking appropriate corrective measures.

B. Applicants shall first demonstrate an inability to avoid or reduce impacts before the use of actions to mitigate potential impacts will be allowed. No activity or use shall be allowed that

results in a net loss of the shoreline ecological functions provided by the critical areas or buffers or has a significant adverse impact on other shoreline functions fostered by the policies of this Master Program and the SMA.

C. **Type, Location, and Timing of Mitigation.** Unless it is demonstrated that a higher level of ecological functioning or greater reduction of hazard risk would result from an alternative approach or as otherwise allowed in this chapter, mitigation for adverse impacts shall be based on best available science, with preferential consideration given to measures that replace the impacted functions directly and in immediate vicinity of the impact and prior to the activities that will disturb the critical area. Mitigation measures that cannot be implemented prior to the critical area impacts shall be completed immediately following disturbance and prior to use or occupancy of the action or development. Construction of mitigation projects shall be timed to reduce impacts to existing fisheries, wildlife, and flora.

1. The Director may authorize a one-time temporary delay in completing construction or installation of the mitigation when the applicant provides a written explanation from a qualified professional as to the rationale for the delay. An appropriate rationale would include identification of the environmental conditions that could produce a high probability of failure or significant construction difficulties (e.g., project delay lapses past a fisheries window, or installing plants should be delayed until the dormant season to ensure greater survival of installed materials). The delay shall not create or perpetuate hazardous conditions or environmental damage or degradation, and the delay shall not be injurious to the health, safety, or general welfare of the public. The request for the temporary delay shall include a written justification that documents the environmental constraints that preclude implementation of the compensatory mitigation plan. The justification shall be verified and approved by the City.

20.240.056 Shoreline restoration projects.

Shoreline restoration projects, defined as projects designed to restore impaired ecological functions of a shoreline, shall be reviewed and permitted or approved by the City and any other agency with jurisdiction consistent with criteria established in WAC 173-27-215 and RCW 90.58.580.

20.240.060 Best available science.

A. **Protect Shoreline Ecological Functions provided by Critical Areas with Special Consideration to Anadromous Fish.** Critical area reports and decisions to alter critical areas or buffers shall rely on the best available science to protect the shoreline ecological functions provided by the critical areas and shall give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fish, such as salmon and bull trout, and their habitat, where applicable.

B. **Best Available Science to Be Consistent with Criteria.** The best available science is that scientific information, obtained through a valid scientific process, that is applicable to the critical area prepared by local, State, or Federal natural resource agencies, a qualified scientific professional, or team of qualified scientific professionals that is consistent with criteria established in WAC 365-195 and RCW 36.70A.172.

C. **Characteristics of a Valid Scientific Process.** In the context of critical areas protection, a valid scientific process is one that produces reliable information useful in understanding the consequences of a local government's regulatory decisions, and in developing critical areas policies and development regulations that will be effective in protecting the shoreline ecological functions provided by the critical areas. To determine whether information received during the permit review process is reliable scientific information, the Director shall determine whether the source of the information displays the characteristics of a valid scientific process. Such characteristics are as follows:

1. **Peer Review.** The information has been critically reviewed by other persons who are qualified scientific experts in that scientific discipline. The proponents of the information have addressed the criticism of the peer reviewers. Publication in a referenced scientific journal usually indicates that the information has been appropriately peer-reviewed;

2. **Methods.** The methods used to obtain the information are clearly stated and reproducible. The methods are standardized in the pertinent scientific discipline or, if not, the methods have been appropriately peer-reviewed to ensure their reliability and validity;

3. **Logical Conclusions and Reasonable Inferences.** The conclusions presented are based on reasonable assumptions supported by other studies and consistent with the general theory underlying the assumptions. The conclusions are logically and reasonably derived from the assumptions and supported by the data presented. Any gaps in information and inconsistencies with other pertinent scientific information are adequately explained;

4. **Quantitative Analysis.** The data have been analyzed using appropriate statistical or quantitative methods;

5. **Context.** The information is placed in proper context. The assumptions, analytical techniques, data, and conclusions are appropriately framed with respect to the prevailing body of pertinent scientific knowledge; and

6. **References.** The assumptions, analytical techniques, and conclusions are well-referenced with citations to relevant, credible literature, and other pertinent existing information.

D. **Nonscientific Information.** Nonscientific information, such as anecdotal observations, nonexpert opinion, and hearsay, may supplement scientific information, but it is not an adequate substitute for valid and available scientific information.

E. **Absence of Valid Scientific Information.** Where there is an absence of valid scientific information or incomplete scientific information relating to a critical area, leading to uncertainty about the risk to shoreline ecological function provided by the critical area, for permitting an alteration of or impact to the critical area, the Director shall:

1. Take a "precautionary or a no-risk approach," that strictly limits development and land use activities until the uncertainty is sufficiently resolved; and

2. Require application of an effective adaptive management program that relies on scientific methods to evaluate how well regulatory and nonregulatory actions protect the critical area. An adaptive management program is a formal and deliberate scientific approach to taking action and obtaining information in the face of uncertainty. An adaptive management program shall:

a. Address funding for the research component of the adaptive management program;

b. Change course based on the results and interpretation of new information that resolves uncertainties; and

c. Commit to the appropriate time frame and scale necessary to reliably evaluate regulatory and nonregulatory actions affecting protection of critical areas and anadromous fisheries.

20.240.070 Classification and rating of critical areas.

To promote consistent application of the standards and requirements of this chapter, critical areas within the City's shoreline jurisdiction shall be rated or classified according to their characteristics, function and value, and/or their sensitivity to disturbance. Classification of critical areas shall be determined by the City using the following tools:

A. Application of the criteria contained in these regulations;

B. Consideration of the critical area reports submitted by qualified professionals in connection with applications subject to these regulations; and

C. Review of maps adopted pursuant to this chapter.

20.240.080 Critical area report – Requirements.

A. **Report Required.** If uses, activities, or developments are proposed within, adjacent to, or are likely to impact critical areas or their buffers, an applicant shall provide site-specific information and analysis in the form of critical area report(s) as required in this chapter. Critical area reports are required in order to identify the presence, extent, and classification/rating of potential critical areas, as well as to analyze, assess, and mitigate the potential adverse impact to or risk from critical areas for a development project. Critical area reports shall use standards for best available science in SMC 20.240.060. Critical area reports for two or more types of critical areas shall meet the report requirements for each type of critical area. The expense of preparing the critical area report(s) shall be borne by the applicant. This provision is not intended to expand or limit an applicant's other obligations under WAC 197-11-100.

B. **Preparation by Qualified Professional.** Critical area report(s) shall be prepared by qualified professional(s) as defined in SMC 20.20.042, with the required training and experience specific to the type(s) of critical area(s) present consistent with the requirements of SMC 20.240.240, 20.240.290, and 20.240.340. Proof of licensing, credentials, and resume of the qualified professional(s) preparing the report shall be submitted for review by the City to determine if the minimum qualifications are met.

C. **Third Party Review of Critical Area Reports.** Review of required critical area reports by a qualified professional under contract with or employed by the City will be required by the Director at the applicant's expense in any of the following circumstances:

1. The project requires a shoreline variance application or a shoreline conditional use permit; or

2. Third party review is specifically required by the provisions of this chapter for the critical area(s) or critical area buffer(s) potentially being impacted; or

3. When the Director determines such services are necessary to demonstrate compliance with the standards and guidelines of this chapter.

D. **Critical Area Report Types or Sections.** Critical area reports may be met in stages through multiple reports or combined in one report. A critical area report shall include one or more of the following sections or report types unless exempted by the Director based on the extent of the potential critical area impacts. The scope and location of the proposed project will determine which report(s) alone or combined are sufficient to meet the critical area report requirements for the impacted critical area type(s). The typical sequence of required sections or reports that will fulfill the requirements of this section include:

1. **Reconnaissance.** The existence, general location, and type of critical areas in the vicinity of a project site (off site within 300 feet for wetlands and fish and wildlife habitat conservation areas and off site within 200 feet for geologic hazards, shorelines, floodplains, and aquifer recharge areas) of a project site (if allowed by the adjoining property owners). Determination of whether the project will adversely impact or be at risk from the potential critical areas based on maximum potential buffers and possible application of SMC 20.240.220(A)(3), 20.240.280(D)(7) or 20.240.330(G)(10) should be addressed;

2. **Delineation.** The extent, boundaries, rating or classification, and applicable standard buffers of critical areas where the project area could potentially impact the critical area or its buffer including an assessment of the characteristics of or functions and values of the critical area and buffers identified;

3. **Analysis.** The proposal and impact assessment report documenting the potential project impacts to the critical area and buffers including a discussion of the efforts taken to avoid, minimize, and reduce potential impacts to those areas;

4. **Mitigation.** The measures that prevent or compensate for the potential impacts of the project designed to meet the requirements of this chapter, in SMC 20.240.082, Mitigation plan requirements, and the standards for the specific critical areas impacted. Mitigation

includes, but is not limited to, adjustments to required buffer sizes, best practices to minimize impacts, and critical area or buffer enhancement, restoration, or preservation plans. Mitigation plans include habitat management plans, revegetation, or replanting plans, and restoration plans;

5. **Maintenance and Monitoring.** The goals of the mitigation proposed, performance standards for success, monitoring methods and reporting schedule, maintenance methods and schedule, and contingency actions. Maintenance and monitoring plans shall be consistent with the mitigation performance standards and requirements of this chapter, including SMC 20.240.250, 20.240.300, and 20.240.350.

E. **Minimum Report Contents.** At a minimum, critical area reports shall contain the following:

1. The name and contact information of the applicant;

2. Adequate information to determine compliance with the requirements of the critical area regulations, this chapter, including critical area report, impact and hazard assessment, and mitigation requirements specific to each critical area type, as indicated in the corresponding sections of this chapter;

3. The dates, names, and qualifications of the qualified professional(s) preparing the report and documentation of any fieldwork performed on the site;

4. A description of the proposal, proposal location including address and parcel number(s), and a vicinity map for the project;

5. Identification of the development permit(s) requested and all other local, State, and/or Federal critical area-related permits required for the project;

6. A copy of the site plan for the development proposal including:

a. A map to standard engineering scale depicting critical areas, buffers, the development proposal, and any areas to be altered. In addition to plan size site plans, a legible, reduced (eight and one-half inches by 11 inches) copy will be required if noticing is required for the project; and

b. A scaled depiction and description of the proposed stormwater pollution prevention plan, consistent with the adopted stormwater manual, for the development and consideration of impacts to critical areas due to drainage alterations;

7. Identification and characterization of all critical areas, wetlands, water bodies, shorelines, and buffers within the vicinity of the proposed project area (off site within 300 feet for wetlands and fish and wildlife habitat conservation areas and off site within 200 feet for geologic hazards, shorelines, floodplains, and aquifer recharge areas);

8. A statement specifying the accuracy of the report and all assumptions made and relied upon;

9. A description of the methodologies used to conduct the critical areas investigation, including references;

10. An assessment of the probable impacts to the critical areas resulting from the proposed development of the site based upon identified findings;

11. A description of reasonable efforts made to apply mitigation sequencing pursuant to SMC 20.240.053, Mitigation requirements, to avoid, minimize, and mitigate impacts to critical areas; and

12. Plans for mitigation required to offset any critical areas impacts, in accordance with SMC 20.240.082, Mitigation plan requirements, and the corresponding mitigation performance standards sections of this chapter, including a discussion of the applicable development standards and cost estimates for determination of financial guarantee requirements.

F. **Existing Reports.** Unless otherwise provided, a critical areas report may incorporate, be supplemented by, or composed of any reports or studies required by other laws and regulations or previously prepared for and applicable to the development proposal site, as approved by the Director. At the discretion of the Director, reports previously compiled or submitted as part of a proposal for development may be used as a critical areas report to the extent that the requirements of this section and the report requirements for each specific critical area type are met. Critical areas reports shall be considered valid for five years; after such date the City shall determine whether a revision or additional assessment is necessary. Supplemental critical area report(s) may be required to provide information and analysis to address changes to the project

scope and potential impacts or to changes to applicable regulations that have been made subsequent to existing, valid critical area reports.

G. **Modifications to Report Requirements.**

1. **Limitations to Study Area.** The Director may limit the required geographic area of the critical areas report as appropriate if:

a. The applicant, with assistance from the City of Shoreline, cannot obtain permission to access properties adjacent to the project area; or

b. The proposed activity will affect only a limited part of the subject site.

2. **Modifications to Required Contents.** The applicant may consult with the Director prior to or during preparation of the critical areas report to obtain approval of modifications to the required contents of the report where, in the judgment of a qualified professional, more or less information is required to adequately address the potential critical area impacts and required mitigation. In some cases, such as when it is determined that no geologic hazard area is present, a full report may not be necessary to determine compliance with the critical area regulations, this chapter, and in those cases a letter or reconnaissance only report may be required.

3. **Additional Information Requirements.** The Director may require additional information to be included in the critical areas report when determined to be necessary to the review of the proposed activity in accordance with this chapter. Additional information that may be required includes, but is not limited to:

a. Historical data, including original and subsequent mapping, aerial photographs, data compilations and summaries, and available reports and records relating to the site or past operations at the site;

b. Grading and drainage plans; and

c. Information specific to the type, location, and nature of the critical area.

20.240.082 Mitigation plan requirements.

When mitigation is required, the applicant shall submit for approval by the City a mitigation plan as part of the critical area report. Mitigation plans shall meet the minimum requirements of SMC

20.240.080 and the applicable mitigation performance standards and requirements for the impacted type(s) of critical area(s) and buffer(s), including but not limited to SMC 20.240.250, 20.240.300, and 20.240.350. When the mitigation plan is submitted separately from other types or sections of the required critical area report(s), the mitigation plan shall meet the minimum content requirements of SMC 20.240.080(E) by inclusion or reference to other existing report(s). The mitigation plan shall include, at a minimum:

A. **Environmental Goals and Objectives.** The mitigation plan shall include a written report identifying environmental goals and objectives of the mitigation proposed and including:

1. A description of the anticipated impacts to the critical areas, the mitigating actions proposed, and the purposes of the compensation measures, including the site selection criteria; identification of compensation goals; identification of shoreline ecological functions; and dates for beginning and completion of site compensation construction activities. The goals and objectives shall be related to the shoreline ecological functions provided by the impacted critical area; and

2. A review of the best available science supporting the proposed mitigation and a description of the report author's experience to date in restoring or creating the type of critical area proposed.

B. **Performance Standards.** The mitigation plan shall include measurable specific criteria for evaluating whether or not the goals and objectives of the mitigation project have been successfully attained at the end of the required monitoring period and whether or not the requirements of this chapter, this Master Program, and the SMA have been met.

C. **Detailed Construction Plans.** The mitigation plan shall include written specifications and descriptions of the mitigation proposed, such as:

1. The proposed construction sequence, timing, and duration;

2. Site plans showing grading and excavation details with minimum two-foot contour intervals;

3. Erosion and sediment control features;

4. A planting plan specifying plant species, quantities, locations, size, spacing, and density; and

5. Measures to protect and maintain plants until established.

These written specifications shall be accompanied by detailed site diagrams, scaled cross-sectional drawings, topographic maps showing slope percentage and final grade elevations, and any other drawings appropriate to show construction techniques or anticipated final outcome.

D. **Monitoring Program and Contingency Plan.**

1. A monitoring program shall be included in the mitigation plan and implemented by the applicant to determine the success of the mitigation project and any necessary corrective actions. This program shall determine if the original goals and objectives of the mitigation plan are being met.

2. A contingency plan shall be established for indemnity in the event that the mitigation project is inadequate or fails. Contingency plans include identification of potential courses of action, and any corrective measures to be taken if monitoring or evaluation indicates project performance standards are not being met. Corrective measures will be required by the City when the qualified professional indicates, in a monitoring report, that the contingency actions are needed to ensure project success by the end of the monitoring period. A performance and maintenance bond, or other acceptable financial guarantee, is required to ensure the applicant's compliance with the terms of the mitigation agreement consistent with SMC 20.240.120, Financial guarantee requirements.

3. Monitoring programs prepared to comply with this section shall include, at a minimum, the following requirements:

a. Best available scientific procedures shall be used to establish the success or failure of the mitigation project. A protocol outlining the schedule for site monitoring (for example, monitoring shall occur in years zero (as-built), one, three, and five after site construction), and how the monitoring data will be evaluated to determine if the performance standards are being met.

b. For vegetation determinations, permanent sampling points shall be established.

c. Vegetative success shall, at a minimum, equal 80 percent survival of planted trees and shrubs and 80 percent cover of desirable understory or emergent plant species at the end of the required monitoring period. Alternative standards for vegetative success, including (but not limited to) minimum survival standards following the first growing season, may be required after consideration of recommendations provided in a critical area report or as otherwise required by the provisions of this chapter.

d. A monitoring report shall be submitted as needed to document milestones, successes, problems, and contingency actions of the mitigation project. Monitoring reports on the current status of the mitigation project shall be submitted, consistent with subsection E of this section, to the City on the schedule identified in the monitoring plan, but not less than every other year. The reports are to be prepared by a qualified professional and reviewed by the City, or a qualified professional retained by the City, and should include monitoring information on wildlife, vegetation, water quality, water flow, stormwater storage and conveyance, and existing or potential degradation, as applicable.

e. Monitoring programs shall be established for a period necessary to establish that performance standards have been met, but not for less than a minimum of five years without approval from the Director.

f. If necessary, failures in the mitigation project shall be corrected.

g. Dead or undesirable vegetation shall be replaced with appropriate plantings.

h. Damage caused by erosion, settling, or other geomorphological processes shall be repaired.

i. The mitigation project shall be redesigned (if necessary) and the new design shall be implemented and monitored, as in subsection (D)(3)(d) of this section.

j. Correction procedures shall be approved by a qualified professional and the City.

k. If the mitigation goals are not obtained within the initial monitoring period, the applicant remains responsible for restoration of the impacted shoreline ecological functions provided by the critical areas or hazard risk reduction until the mitigation goals agreed to in the mitigation plan are achieved.

E. **Monitoring Reports.** Monitoring reports shall be submitted to the City consistent with the approved monitoring plan.

1. The as-built report, required prior to final inspection, shall, at a minimum, include documentation of the following to establish the baseline for monitoring:

a. Departures from the original approved plans;

b. Construction supervision provided by the qualified professional;

c. Approved project goals and performance standards;

d. Baseline data for monitoring per the approved monitoring methods;

e. Photos from established photo points; and

f. A site plan showing final mitigation as constructed or installed, monitoring points, and photo points.

2. Subsequent monitoring reports shall, at a minimum, include:

a. Monitoring visit observations, documentation, and analysis of monitoring data collected;

b. Photos from photo points;

c. Determination whether performance standards are being met; and

d. Maintenance and/or contingency action recommendations to ensure success of the project at the end of the monitoring period.

3. The applicant shall be responsible for the cost (at the current hourly rate) of review of monitoring reports and site inspections during the monitoring period, which are completed by the City or a qualified professional under contract with or employed by the City.

F. **Cost Estimates.** The mitigation plan shall include cost estimates that will be used by the City to calculate the amounts of financial guarantees, if necessary, to ensure that the mitigation plan is fully implemented. Financial guarantees ensuring fulfillment of the mitigation project,

monitoring program, and any contingency measures shall be posted in accordance with SMC 20.240.120, Financial guarantee requirements.

G. **Approved Mitigation Projects – Signature.** On completion of construction, an as-built report for any approved mitigation project shall be prepared and signed off by the applicant's qualified professional and approved by the City. Signature of the qualified professional on the required as-built report and approval by the City will indicate that the construction has been completed as planned.

20.240.085 Pesticides, herbicides and fertilizers on City-owned property.

Pesticides, herbicides and fertilizers which have been identified by State or Federal agencies as harmful to humans, wildlife, or fish shall not be used in City-owned properties containing critical areas or their buffers within the shoreline jurisdiction except as allowed by the Director for the following circumstances:

A. When the Director determines that an emergency situation exists where there is a serious threat to public safety, health, or the environment, and that an otherwise prohibited application shall be used as a last resort.

B. Compost or fertilizer may be used for native plant revegetation projects in any location.

C. Limited pesticide and herbicide use may be applied pursuant to the King County Noxious Weed Control Board best management practices, specific to the species needing control, when that is determined to be the best method of control for the location. Federal, State, and local regulations of pesticides and water quality shall be followed, including requirements for pesticide applicator licensing from the Washington State Department of Agriculture.

20.240.090 Buffer areas.

The establishment of buffer areas shall be required for all development proposals and activities in or adjacent to critical areas within the shoreline jurisdiction. In all cases the standard buffer shall apply unless the Director determines that additional buffer width is necessary or reduced buffer is sufficient to protect the shoreline ecological functions consistent with the provisions of this chapter, this Master Program, the SMA, and the recommendations of a qualified professional. The purpose of the buffer shall be to protect the integrity, function, value and resource of the subject critical area for shoreline ecological function, and/or to protect life, property and resources from risks associated with development on unstable or critical lands.

The buffer shall consist of an undisturbed area of native vegetation. Buffers shall be protected during construction by placement of a temporary barricade if determined necessary by the City, on-site notice for construction crews of the presence of the critical area, and implementation of appropriate erosion and sedimentation controls. Restrictive covenants or conservation easements may be required to preserve and protect buffer areas.

20.240.100 Notice to title.

A critical area notice to title is required, as a condition of permit issuance or project approval, when a permit or development application is submitted for development on any property containing a critical area or buffer within the shoreline jurisdiction. The purpose is to inform subsequent purchasers of real property of the existence of critical areas. This requirement can be met through recording of a notice to title prepared by the City, establishment of a critical area tract, or recording of native growth protection area easement consistent with the following provisions:

A. **Notice to Title.** A notice to title is required when a permit is required for development on any property containing a critical area or buffer within the shoreline jurisdiction. The notice to title applicable to the property shall be approved by the Director and City Attorney for compliance with this provision and be filed by the property owner, at their expense, with the King County Recorder's Office. The title holder will have the right to challenge this notice and to have it extinguished if the critical area designation no longer applies. However, the titleholder shall be responsible for completing a critical area report, subject to approval by the Director, before the notice on title can be extinguished. The notice shall state that critical areas or buffers have been identified on the property within the shoreline jurisdiction and that limitations on actions in or affecting the critical area or buffer may exist. The notice shall run with the land. A critical area tract or native growth protection area easement shall be required to meet the notice to title requirement as follows:

1. **Critical Area Tract.** Subdivisions, short subdivisions, and binding site plans shall establish a separate critical areas tract as a permanent protective measure for wetlands, fish and wildlife habitat conservation areas, and landslide hazard areas and their buffers located within the shoreline jurisdiction. The plat or binding site plan for the project shall clearly depict the critical areas tract, and shall include all of the subject critical area, any required buffer, and any additional lands included voluntarily by the developer. Restrictions to development within the critical area tract shall be clearly noted on the plat or plan.

Restrictions shall be consistent with this chapter, this Master Program, and the SMA for the entire critical area tract. Should the critical area tract include several types of critical areas, the developer may establish separate critical areas tracts.

2. **Native Growth Protection Area.** NGPA easements shall be required on a property where no subdivision, short subdivision, or binding site plan is proposed or required. Unless otherwise required in this chapter, native growth protection area (NGPA) easements shall be recorded on title for all affected parcels prior to approval of a development agreement, issuance of a master development plan permit, or issuance of a site development or building permit, when two or more dwelling units and/or nonresidential development are proposed on one parcel, to delineate and protect those contiguous wetlands, fish and wildlife habitat conservation, and landslide hazard critical areas and their buffers located within the shoreline jurisdiction. The easement to be recorded shall clearly depict the critical area and the limits of the NGPA easement and shall include all of the subject critical area(s) and any required buffer(s). Restrictions to development within the NGPA easement shall be clearly noted in the easement and shall include the following:

a. That native vegetation will be preserved for the purpose of preventing harm to property and the environment, including, but not limited to, controlling surface water runoff and erosion, limiting chemical applications of hazardous substances (pesticides, herbicides, fertilizers), maintaining slope stability, buffering, and protecting plants, fish, and animal habitat; and

b. The right of the City to enforce the terms of the restriction.

B. **Proof of Notice.** The applicant shall submit proof that the notice has been recorded on title before the City approves any development permit, including master development plan permits, for the property or, in the case of subdivisions, short subdivisions, binding site plans, or development agreements, at or before recording.

20.240.110 Permanent field marking.

A. All critical areas tracts, easements, and dedications, or as recommended by a qualified professional, shall be clearly marked on the site using permanent markings, placed at least every 50 feet, which include the following text:

City of Shoreline Designated Critical Area. Activities, including clearing and grading, removal of vegetation, pruning, cutting of trees or shrubs, planting of nonnative species, and other alterations may be prohibited. Help protect and care for this area. Please contact the City of Shoreline with questions or concerns.

B. It is the responsibility of the landowner to maintain in perpetuity and replace if necessary all permanent field markings.

20.240.120 Financial guarantee requirements.

Bonds, and other financial guarantees, and associated performance agreements or maintenance/defect/monitoring agreements shall be required for projects with required mitigation or restoration of impacts to critical areas or critical area buffers consistent with the following:

A. A performance agreement and bond, or other acceptable financial guarantee, are required from the applicant when mitigation required pursuant to a development proposal is not completed prior to final permit approval, such as final plat approval or final building inspection. The amount of the performance bond(s) shall equal 125 percent of the cost of the mitigation project (after City mobilization is calculated).

B. A performance agreement and bond, or other acceptable financial guarantee, are required from the applicant when restoration is required for remediation of a critical area violation. The amount of the performance bond(s) shall equal 125 percent of the cost of the mitigation project (after City mobilization is calculated).

C. A maintenance/defect/monitoring agreement and bond, or other acceptable financial guarantee, are required to ensure the applicant's compliance with the conditions of the approved mitigation plan pursuant to a development proposal or restoration plan for remediation of a violation. The amount of the maintenance bond(s) shall equal 25 percent of the cost of the mitigation project (after City mobilization is calculated) in addition to the cost for monitoring for a minimum of five years. The monitoring portion of the financial guarantee may be reduced in proportion to work successfully completed over the period of the bond. The bonding period shall coincide with the monitoring period.

20.240.130 Unauthorized critical area alterations.

A. When a critical area or its buffer located within the shoreline jurisdiction has been altered in violation of this chapter, all ongoing development work shall stop and the critical area shall be restored. The City shall have the authority to issue a stop work order to cease all development, and order restoration measures at the owner's or other responsible party's expense to remediate the impacts of the violation of the provisions of this chapter.

B. **Requirement for Restoration Plan.** All development shall remain stopped until a restoration plan is prepared by the responsible party and an approved permit is issued by the City. Such a plan shall be prepared by a qualified professional using the best available science and shall describe how the actions proposed meet the minimum requirements described in subsection C of this section. The Director may, at the responsible party's expense, seek expert advice, including but not limited to third party review by a qualified professional under contract with or employed by the City, in determining if the plan meets the minimum performance standards for restoration. Submittal, review, and approval of required restoration plans for remediation of violations of this chapter, Critical Areas, shall be completed through a site development permit application process.

C. **Minimum Performance Standards for Restoration.**

1. For alterations to aquifer recharge areas, wetlands, and fish and wildlife habitat conservation areas, the following minimum performance standards shall be met for the restoration; provided, that if the violator can demonstrate that greater shoreline ecological functions provided through the functions and values provided by these critical areas can be obtained, these standards may be modified:

a. The pre-violation function and values of the affected critical areas and buffers shall be restored, including water quality and habitat functions;

b. The critical area and buffers shall be replanted with native vegetation that replicates the vegetation historically, or pre-violation, found on the site in species types, sizes, and densities. The pre-violation functions and values should be replicated at the location of the alteration; and

c. Information demonstrating compliance with the requirements in SMC 20.240.082, Mitigation plan requirements, and the applicable mitigation sections for the affected

type(s) of critical area(s) and their buffer(s) shall be submitted to the Director with a complete site development permit application.

2. For alterations to flood hazard and geologic hazard areas, the following minimum performance standards shall be met for the restoration of a critical area; provided, that if the violator can demonstrate that greater safety can be obtained, these standards may be modified:

a. The hazard shall be reduced to a level equal to, or less than, the pre-violation hazard;

b. Any risk of personal injury resulting from the alteration shall be eliminated or minimized; and

c. The hazard area and buffers shall be replanted with native vegetation sufficient to minimize the hazard.

D. **Site Investigation.** The Director is authorized to take such actions as are necessary to enforce this chapter. The Director shall present proper credentials and obtain permission before entering onto private property.

E. **Penalties.** Any responsible party violating of any of the provisions of this chapter may be subject to any applicable penalties per SMC 20.30.770, WAC 173-27-240, and RCW 90.58.200 and 90.58.210, plus the following:

1. A square footage cost of $3.00 per square foot of impacted critical area buffer within the shoreline jurisdiction; and/or a square footage cost of $15.00 per square foot of impacted critical area within the shoreline jurisdiction; and

2. A per tree penalty in the amount of $3,000 per nonsignificant tree and $9,000 per significant tree, for trees removed from a critical area or critical area buffer within the shoreline jurisdiction in violation of the provisions of this chapter.

3. The civil penalty shall not exceed one thousand dollars for each violation consistent with RCW 90.58.210 and WAC 173-27-270. Each permit violation or each day of continued development without a required permit shall constitute a separate violation.

Subchapter 2.

Geologic Hazard Areas

20.240.210 Geologic hazards – Designation and purpose.

A. Geologic hazard areas are those lands that are susceptible to erosion, landsliding, seismic, or other geological events as identified by WAC 365-190-120. These areas may not be suited for development activities because these areas may pose a threat to public health and safety. These areas also provide important shoreline ecological functions. Eroding coastal bluffs, called feeder bluffs, are the primary source of sediment for Puget Sound beaches and contribute to vital coastal processes. However, since most of the city's coastline consists of BNSF railroad right-of-way, opportunity for the natural erosion and sediment transport process is limited.

Areas susceptible to one or more of the following types of hazards shall be designated as geologic hazard areas:

1. Landslide hazard;

2. Seismic hazard;

3. Erosion hazard.

B. The primary purposes of geologic hazard area regulations are to avoid and minimize potential impacts to life and property from geologic hazards, conserve soil resources, protect shoreline ecological functions, and minimize structural damage relating to seismic hazards. This purpose shall be accomplished through appropriate levels of study and analysis, application of sound engineering principles, and regulation or limitation of land uses, including maintenance of existing vegetation, regulation of clearing and grading activities, and control of stormwater.

20.240.220 Geologic hazards – Classification.

Geologic hazard areas shall be classified according to the criteria in this section as follows:

A. **Landslide Hazard Areas.** Landslide hazard areas are those areas potentially subject to landslide activity based on a combination of geologic, topographic and hydrogeologic factors as classified in subsection B of this section with slopes 15 percent or steeper within a vertical elevation change of at least 10 feet or all areas of prior landslide activity regardless of slope. A slope is delineated by establishing its toe and top, and measuring the inclination over 10 feet of vertical relief (see Figure 20.240.220(A)). The edges of the geologic hazard are identified where

the characteristics of the slope cross-section change from one landslide hazard classification to another, or no longer meet any classification. Additionally:

1. The toe of a slope is a distinct topographic break which separates slopes inclined at less than 15 percent from slopes above that are 15 percent or steeper when measured over 10 feet of vertical relief; and

2. The top of a slope is a distinct topographic break which separates slopes inclined at less than 15 percent from slopes below that are 15 percent or steeper when measured over 10 feet of vertical relief.

Slope Delineation

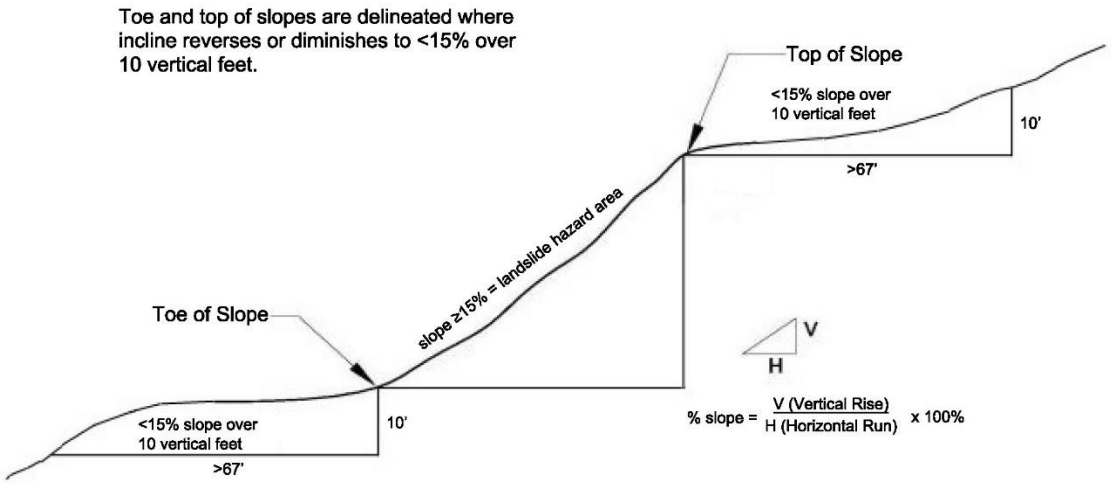


Figure 20.240.220(A): Illustration of slope calculation for determination of top and toe of landslide hazard area.

B. **Landslide Hazard Area Classification.** Landslide hazard areas are classified as follows:

1. **Moderate to High Risk.**

a. Areas with slopes between 15 percent and 40 percent and that are underlain by soils that consist largely of sand, gravel or glacial till that do not meet the criteria for very high risk areas in subsection (B)(2) of this section;

b. Areas with slopes between 15 percent and 40 percent that are underlain by soils consisting largely of silt and clay and do not meet the criteria for very high risk areas in subsection (B)(2) of this section; or

c. All slopes of 10 to 20 feet in height that are 40 percent slope or steeper and do not meet the criteria for very high risk in subsection (B)(2)(a) or (b) of this section.

2. **Very High Risk.**

a. Areas with slopes steeper than 15 percent with zones of emergent water (e.g., springs or ground water seepage);

b. Areas of landslide activity (scarps, movement, or accumulated debris) regardless of slope; or

c. All slopes that are 40 percent or steeper and more than 20 feet in height when slope is averaged over 10 vertical feet of relief.

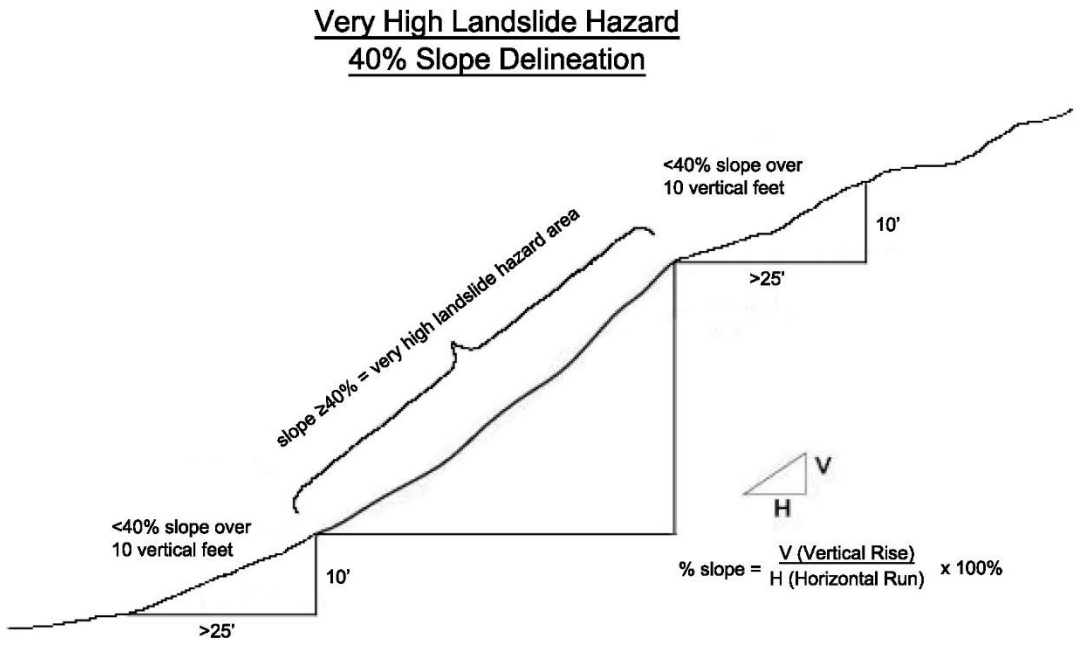


Figure 20.240.220(B): Illustration of very high risk landslide hazard area delineation (no midslope bench).

C. **Seismic Hazard Areas.** Seismic hazard areas are lands that, due to a combination of soil and ground water conditions, are subject to risk of ground shaking, lateral spreading, subsidence or liquefaction of soils during earthquakes. These areas are typically underlain by soft or loose saturated soils (such as alluvium) or peat deposits and have a shallow ground water table. These areas are designated as having “high” and “moderate to high” risk of liquefaction as mapped on the Liquefaction Susceptibility and Site Class Maps of Western Washington State by County by the Washington State Department of Natural Areas.

D. **Erosion Hazard Areas.** Erosion hazard areas are lands or areas underlain by soils identified by the U.S. Department of Agriculture Natural Resources Conservation Service (formerly the Soil Conservation Service) as having “severe” or “very severe” erosion hazards. This includes, but is not limited to, the following group of soils when such soils occur on slopes of 15 percent or greater: Alderwood-Kitsap (AkF), Alderwood gravelly sandy loam (AgD), Kitsap silt loam (KpD), Everett (EvD) and Indianola (InD).

20.240.222 Geologic hazards – Mapping.

A. The approximate location and extent of geologic hazard areas are shown on City of Shoreline geologic hazard data layers maintained in the City of Shoreline geographic information system (GIS). In addition, the following maps and resources providing information on the location and extent of geologic hazard areas are hereby adopted by reference as amended:

1. Washington Department of Ecology coastal zone atlas (for marine bluffs);

2. U.S. Geological Survey geologic maps, landslide hazard maps, and seismic hazard maps;

3. Washington State Department of Natural Resources seismic hazard maps for Western Washington, including, but not limited to, the Liquefaction Susceptibility and Site Class Maps of Western Washington State by County;

4. Washington State Department of Natural Resources slope stability maps; and

5. Soils maps produced by the U.S. Department of Agriculture, National Resources Conservation Service.

B. The critical areas maps and the resources cited above are to be used as a guide for the City of Shoreline Planning and Community Development Department, project applicants, and/or property owners and may be continuously updated as new critical areas are identified. These maps and resources are a reference and do not provide a final critical area designation.

20.240.224 Geologic hazards – Development standards.

A. Development, activities, and uses shall be allowed in geologic hazard areas and their required buffers only as provided for in this chapter.

B. **Activities Allowed in All Geologic Hazard Areas and Buffers.** The activities listed below are allowed in the identified geologic hazard areas types pursuant to SMC 20.240.040, Allowed activities, and subject to applicable permit approvals. These activities do not require submission of a critical area report.

1. All allowed activities per SMC 20.240.040;

2. Installation of fences as allowed without a building permit in Chapter 20.50 SMC, General Development Standards;

3. Nonstructural interior remodel, maintenance, or repair of structures which do not meet the standards of this chapter, if the maintenance or repair does not increase the footprint or height of the structure and there is no increased risk to life or property as a result of the proposed maintenance or repair; and

C. **Alteration.** The City may approve, condition, or deny proposals in a geologic hazard area based upon the effective mitigation of risks posed to property, health and safety and compensation of the loss of shoreline ecological functions. The objective of mitigation measures shall be to render a site containing a geologic hazard as safe as one not containing such hazard. Conditions may include applicable stormwater management practices, limitations of proposed uses, modification of density, alteration of site layout, and other appropriate changes to the proposal.

Where potential impacts cannot be effectively mitigated to ensure no net loss of the shoreline ecological functions provided by the critical area, and to eliminate a significant risk to public health and safety and property or other critical area, the proposal shall be denied, except as granted by a shoreline variance consistent with 20.220.040.

D. **Alteration of Moderate to High Risk Landslide Hazards.** Development activities and uses that result in unavoidable alterations may be permitted in moderate to high risk landslide hazard areas or their buffers in accordance with an approved geologic hazard critical area report. The recommendations contained within the critical area report shall be incorporated into the proposed alteration of the landslide hazard area or its buffers.

The critical area report shall certify that:

1. The risk of damage from the proposal, both on site, and off site, are minimal subject to the conditions set forth in the report;

2. The proposal will not increase the risk of occurrence of the potential landslide hazard; and

3. Measures to eliminate or reduce risks have been incorporated into the report's recommendations and project development plans.

E. **Alteration of Very High Risk Landslide Hazard Areas.** Alterations of a very high risk landslide hazard area and/or buffer may only occur for activities for which a critical area report with a hazards analysis is submitted and certifies that:

1. The development will not increase surface water discharge or sedimentation on site or to adjacent properties beyond pre-development conditions;

2. The development will not decrease slope stability on the site or on adjacent properties;

3. Such alterations will meet other critical areas regulations; and

4. The design criteria in subsection F of this section are met.

F. **Design Criteria for Alteration of Very High Risk Landslide Hazard Areas.** Development within a very high risk landslide hazard area and/or buffer shall be designed to meet the following basic requirements unless it can be demonstrated that an alternative project design provides greater short- and long-term slope stability while meeting all other provisions of this chapter. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function. The basic development design criteria are:

1. The proposed development shall not decrease the factor of safety for landslide occurrences below the limits of 1.5 for static conditions and 1.2 for dynamic conditions. Proposed alteration of natural slopes, that does not include structures, shall not decrease the factor of safety for landslide occurrences below the limits of 1.3 for static conditions and 1.0 for seismic. Where the existing conditions are below these limits, the proposed development shall increase the factor of safety to these limits or will not be permitted. Analysis of dynamic conditions shall be based on the seismic event as established by the current version of the International Building Code;

2. New structures and improvements shall be clustered to avoid geologic hazard areas and other critical areas;

3. New structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography;

4. New structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;

5. The proposed development shall not result in greater risk of the hazard or a need for increased buffers on neighboring properties;

6. Where the existing natural slope area cannot be retained undisturbed with native vegetation, the use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes; and

7. Development shall be designed to minimize impervious lot coverage and preserve native vegetation and trees to the maximum extent practicable.

G. **Additional Requirements for Alteration of Very High Risk Hazard Landslide Areas.**

1. Prior to application, the applicant shall meet the requirements of and conduct a neighborhood meeting consistent with SMC 20.30.090. The notification area shall be limited to:

a. All property owners whose properties adjoin the subject property; and

b. Properties that include part of the subject property's very high risk landslide hazard area and the standard 50-foot buffer, but not to exceed a maximum of 200 feet from the project clearing limits.

2. Prior to permit issuance, the property owner shall sign and record on title, at the owner's sole expense, a covenant in a form acceptable to the City, which:

a. Acknowledges and accepts the risks of development in the landslide hazard area;

b. Waives any rights to claims against the City;

c. Indemnifies and holds harmless the City against claims, losses, and damages;

d. Informs subsequent owners of the property of the risks and the covenant; and

e. Advisability of obtaining added insurance.

3. Prior to permit issuance, the piling and excavation contractors shall submit insurance bonding documentation that includes coverage for subsidence and underground property damage, listing the City as an additional insured. The Director may require adequate bonds and/or insurance to cover potential claims for property damage that may arise from or be related to the following:

a. Excavation or fill within a landslide-prone area when the depth of the proposed excavation exceeds four feet and the bottom of the proposed excavation is below the 100 percent slope line (45 degrees from a horizontal line) from the property line; or

b. In other circumstances where the Director determines that there is a potential for significant harm to any type of critical area or a critical area buffer during the construction process.

4. If the Building Official has reasonable grounds to believe that an emergency exists because significant changes in geologic conditions at a project site or in the surrounding area may have occurred since a permit was issued, increasing the risk of damage to the proposed development, to neighboring properties, or to nearby surface waters, the building official may, by letter or other reasonable means of notification, suspend the permit until the applicant has submitted a letter of certification. The letter of certification shall be based on such factors as the presence of known slides, indications of changed conditions at the site

or the surrounding area, or other indications of unstable soils and meet the following requirements:

a. The letter of certification shall be from the current project qualified professional geotechnical engineer of record stating that a qualified professional geotechnical engineer has inspected the site and area surrounding the proposed development within the 60 days preceding submittal of the letter; and that:

i. In the project geotechnical engineer's professional opinion no significant changes in conditions at the site or surrounding area have occurred that render invalid or out-of-date the analysis and recommendations contained in the technical reports and other application materials previously submitted to the City as part of the application for the permit; or that

ii. In the project geotechnical engineer's professional opinion, changes in conditions at the site or surrounding area have occurred that require revision to project criteria and that all technical reports and any necessary revised drawings that account for the changed conditions have been prepared and submitted.

5. The letter of certification and any required revisions shall be reviewed and approved by the City's third party qualified professional, at the applicant's expense, before the Building Official may allow work to continue under the permit.

H. **Alteration of Seismic Hazard Areas.** Development activities and uses in seismic hazard areas may be permitted, based on review of a critical area report demonstrating that the project is consistent with SMC 20.240.053(A)(2) through (6). The report shall certify that the risks of damage from the proposal, both on site and off site, are minimal subject to the conditions set forth in the report, that the proposal will not increase the risk of occurrence of the potential hazard, and that measures to eliminate or reduce risks have been incorporated into the report's recommendations. The report shall include the following:

1. For one-story and two-story detached residential structures, a qualified professional shall conduct an evaluation of site response and liquefaction potential based on current mapping, site reconnaissance, research of nearby studies.

2. For all other proposals, the qualified professional shall conduct an evaluation of site response and liquefaction potential including sufficient subsurface exploration to determine

the site coefficient for use in the static lateral force procedure described in the International Building Code.

I. **Alteration of Erosion Hazard Areas.** Development activities and uses in erosion hazard areas may be permitted, based on review of a critical area report demonstrating that the project is consistent with SMC 20.240.053(A)(2) through (6) and the following provisions:

1. All development proposals on sites containing erosion hazard areas shall include a stormwater pollution prevention plan consistent with the requirements of the adopted stormwater manual and a mitigation plan to ensure revegetation and permanent stabilization of the site. Specific requirements for revegetation in mitigation plans shall be consistent with the mitigation plan requirements in SMC 20.240.082 and the mitigation performance standards for geologic hazard areas in SMC 20.240.250. Revegetation for site stabilization may be combined with required landscape, tree retention, and/or other critical area mitigation plans as appropriate.

2. All subdivisions, short subdivisions or binding site plans on sites with erosion hazard areas shall comply with the following additional requirements:

a. Except as provided in this section, existing vegetation shall be retained on all lots until building permits are approved for development on individual lots;

b. If any vegetation on the lots is damaged or removed during construction of the subdivision infrastructure, the applicant shall be required to implement the revegetation plan in those areas that have been impacted prior to final inspection of the site development permit or the issuance of any building permit for the subject property;

c. Clearing of vegetation on individual lots may be allowed prior to building permit approval if the City determines that:

i. Such clearing is a necessary part of a large-scale grading plan,

ii. It is not feasible to perform such grading on an individual lot basis, and

iii. Drainage from the graded area will meet established water quality standards.

3. Where the City determines that erosion from a development site poses a significant risk of damage to downstream receiving water, the applicant shall be required to provide regular

monitoring of surface water discharge from the site during the project construction or installation. If the project does not meet water quality standards, the City may suspend further development work on the site until such standards are met.

4. The City may require additional mitigation measures in erosion hazard areas, including, but not limited to, the restriction of major soil-disturbing activities associated with site development between October 1st and April 30th to meet the stated purpose contained in SMC 20.240.010 and 20.240.210.

5. The use of hazardous substances, pesticides and fertilizers in erosion hazard areas may be prohibited by the City.

20.240.230 Geologic hazard areas – Required buffer areas.

A. Buffers for geologic hazard areas shall be maintained as undisturbed native vegetation consistent with SMC 20.240.090. Building and other improvement setbacks will be required in addition to buffers as recommended by the qualified professional to allow for landscaping, access around structures for maintenance, and location of stormwater facilities at safe distances from geologic hazard areas where native vegetation is not necessary to reduce the risk of the hazard.

B. Required buffer widths for geologic hazard areas shall reflect the sensitivity of the hazard area and the risks associated with development and, in those circumstances permitted by these regulations, the type and intensity of human activity and site design proposed to be conducted on or near the area.

C. In determining the appropriate buffer width, the City shall consider the recommendations contained in a geotechnical critical area report required by these regulations.

D. For moderate to high risk landslide hazard areas, the qualified professional shall recommend whether buffers should be required and the width of those buffers, as well as recommending any additional setbacks for buildings and stormwater facilities adequate to certify no increase in the risk of the hazard.

E. For very high risk landslide hazard areas, the standard buffer shall be 50 feet from all edges of the landslide hazard area. Larger buffers may be required as needed to eliminate or minimize the risk to people and property based on a geotechnical critical area report. The standard buffer may be reduced when geotechnical studies demonstrate, and the qualified

professional certifies, that the reduction will not increase the risk of hazard to people or property, on or off site; however, the minimum buffer shall be 15 feet.

F. Landslide hazard areas and associated buffers shall be placed either in a separate tract on which development is prohibited, protected by execution of an easement, dedicated to a conservation organization or land trust, or similarly preserved through a permanent protective mechanism acceptable to the City. The location and limitations associated with the critical landslide hazard and its buffer shall be shown on the face of the deed or plat applicable to the property and shall be recorded with the King County Recorder's Office.

20.240.240 Geologic hazards – Critical area report requirements.

A. **Report Required.** If the Director determines that the site of a proposed development includes, is likely to include, or is adjacent to a geologic hazard area, a critical area report shall be required, at the applicant's expense. Critical area report requirements for geologic hazard areas are met through submission to the Director of one or more geologic hazard critical area reports (also referred to as geotech or geotechnical engineering reports). In addition to the general critical areas report requirements of SMC 20.240.080, critical areas reports for geologic hazard areas shall meet the requirements of this section. Critical areas reports for two or more types of critical areas shall meet the report requirements for each relevant type of critical area.

B. **Preparation by a Qualified Professional.** Critical areas reports for potential geologic hazard areas shall be prepared, stamped, and signed by a qualified geotechnical engineer or engineering geologist licensed in the State of Washington, with minimum required experience, per SMC 20.20.042, analyzing geologic, hydrologic, and ground water flow systems, and who has experience preparing reports for the relevant type of hazard. If mitigation measures are necessary, the report detailing the mitigation measures and design of the mitigation shall be prepared by a qualified professional with experience stabilizing geologic hazard areas with similar geotechnical properties and by a qualified vegetation ecologist, landscape architect, or arborist with experience designing and monitoring vegetative stabilization of geologic hazard areas.

C. **Third Party Review Required.** Critical areas studies and reports on geologically hazardous areas will be subject to third party review at the owner's sole expense as provided in SMC 20.240.080(C) and in the following circumstances:

1. A buffer reduction or alteration of the critical area or buffer is proposed for a very high risk landslide hazard areas.

D. **Minimum Report Contents for Geologic Hazard Areas.** A critical area report for geologic hazard areas shall include a field investigation, contain an assessment of whether or not each type of geologic hazard identified in SMC 20.240.210 is present or not present, and determine if the proposed development of the site will increase the risk of the hazard on or off site. The written critical area report(s) and accompanying plan sheet(s) shall contain the following information at a minimum:

1. The minimum report contents required per SMC 20.240.080(E);

2. Documentation of any fieldwork performed on the site, including field data sheets for soils, test pit locations, baseline hydrologic data, site photos, etc.;

3. A description of the methodologies used to conduct the geologic hazard areas delineations, classifications, hazards assessments and/or analyses of the proposal impacts including references;

4. **Site and Construction Plans.** The report shall include a copy of the site plans for the proposal, drawn at an engineering scale, showing:

a. The type and extent of geologic hazard areas, any other critical areas, and buffers on, adjacent to, off site within 200 feet of, or that are likely to impact or be affected by the proposal;

b. Proposed development, including the location of existing and proposed structures, fill, significant trees to be removed, vegetation to be removed, storage of materials, and drainage facilities;

c. The topography, in two-foot contours, of the project area and all hazard areas addressed in the report;

d. Height of slope, slope gradient, and cross-section of the project area;

e. The location of springs, seeps, or other surface expressions of ground water on or off site within 200 feet of the project area or that have the potential to affect or be affected by the proposal;

f. The location and description of surface water on or off site within 200 feet of the project area or that has the potential to be affected by the proposal; and

g. Clearing limits, including required tree protection consistent with SMC 20.50.370.

5. **Stormwater Pollution Prevention Plan (SWPPP).** For any development proposed with land-disturbing activities on a site containing a geologic hazard area, a stormwater pollution prevention plan (also known as an erosion and sediment control plan) shall be required. The SWPPP, in compliance with the requirements of Chapter 13.10 SMC, shall be included in the critical area report or be referenced if it is prepared separately.

6. **Assessment of Geological Characteristics.** The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region. The assessment shall include, but not be limited to:

a. A detailed overview of the field investigations, published data, and references; data and conclusions from past assessments of the site; and site-specific measurements, tests, investigations, or studies that support the identification of geologically hazardous areas; and

b. A summary of the existing site conditions, including:

i. Surface topography, existing features, and vegetation found in the project area and in all hazard areas addressed in the report;

ii. Surface and subsurface geology and soils to sufficient depth based on data from site-specific explorations;

iii. Geologic cross-section(s) displaying the critical design conditions;

iv. Surface and ground water conditions; and

c. A description of the vulnerability of the site to seismic and other geologic events.

7. **Analysis of Proposal.** The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the identified hazard area(s), the subject property, and affected adjacent properties. The hazards analysis component of the critical areas report shall include the following based on the type(s) of geologic hazard areas identified:

a. Recommendations for the minimum buffer consistent with SMC 20.240.230 and recommended minimum drainage and building setbacks from any geologic hazard based upon the geotechnical analysis. Buffers shall be maintained consistent with SMC 20.240.090; however, the qualified professional may recommend additional setbacks for drainage facilities or structures which do not have to be maintained as undisturbed native vegetation; and

b. An analysis of proposed surface and subsurface drainage, and the vulnerability of the site to erosion.

E. **Additional Technical Information Requirements for Landslide Hazard Areas.** The technical information required in a critical area report for a project within a landslide hazard area shall also include the following:

1. An estimate of the present stability of the subject property, the stability of the subject property during construction, the stability of the subject property after all development activities are completed, and a discussion of the relative risks and slide potential relating to adjacent properties during each stage of development, including the effect construction and placement of structures, clearing, grading, and removal of vegetation will have on the slope over the estimated life of the structure;

2. An estimate of the bluff retreat rate that recognizes and reflects potential catastrophic events such as seismic activity or a 100-year storm event;

3. Consideration of the run-out hazard of landslide debris and/or the impacts of landslide run-out on downslope properties;

4. A study of slope stability including an analysis of proposed cuts, fills, and other site grading;

5. Compliance with the requirements of SMC 20.240.224(D) for alterations proposed in moderate to high risk landslide hazard areas;

6. Compliance with the requirements of SMC 20.240.224(E) through (G) for alterations proposed in very high risk landslide hazard areas;

7. Parameters for design of site improvements including appropriate foundations and retaining structures. These should include allowable load and resistance capacities for bearing and lateral loads, installation considerations, and estimates of settlement performance;

8. Recommendations for drainage and subdrainage improvements;

9. Earthwork recommendations including clearing and site preparation criteria, fill placement and compaction criteria, temporary and permanent slope inclinations and protection, and temporary excavation support, if necessary; and

10. Mitigation of adverse site conditions including slope stabilization measures and seismically unstable soils, if appropriate.

F. **Additional Technical Information Requirements for Seismic Hazard Areas.** The technical information required in a critical area report for a project within a seismic hazard area shall also include the following:

1. A complete discussion of the potential impacts of seismic activity on the site (for example, forces generated and fault displacement);

2. Additionally, a geotechnical engineering report for a seismic hazard area shall evaluate the physical properties of the subsurface soils, especially the thickness of unconsolidated deposits and their liquefaction potential. If it is determined that the site is subject to liquefaction, mitigation measures appropriate to the scale of the development shall be recommended and implemented; and

3. Any additional information or analysis necessary to demonstrate compliance with the standards for alteration in seismic hazard areas in SMC 20.240.224(H).

G. **Limited Report Requirements for Stable Erosion Hazard Areas.** When recommended by the qualified professional for sites only overlain by erosion hazard areas with suitable slope

stability, and no other type of critical area or buffer, detailed critical areas report requirements may be waived. Report requirements for stable erosion hazard areas may be met through construction documents that shall include at a minimum a stormwater pollution plan prepared in compliance with requirements set forth in Chapter 13.10 SMC.

H. **Mitigation of Long-Term Impacts.** When hazard mitigation is required, the mitigation plan shall specifically address how the activity maintains or reduces the preexisting level of risk to the site and adjacent properties on a long-term basis (equal to or exceeding the projected lifespan of the activity or occupation). Proposed mitigation techniques shall be considered to provide long-term hazard reduction only if such techniques do not require regular maintenance or other actions to maintain their function. Mitigation may also be required to avoid any increase in risk above the preexisting conditions following abandonment of the activity.

I. **Additional Information.** When appropriate due to the proposed impacts or the project area conditions, the Director may also require the critical area report to include:

1. Where impacts are proposed, mitigation plans consistent with the requirements of SMC 20.240.082 and the geologic hazards mitigation performance standards and requirements of SMC 20.240.250;

2. A request for consultation with the Washington Department of Fish and Wildlife (DFW), Washington Department of Ecology (Ecology), local Native American Indian tribes, or other appropriate agency; and

3. Detailed surface and subsurface hydrologic features both on and adjacent to the site.

20.240.250 Geologic hazards – Mitigation performance standards and requirements.

A. **Requirements for Mitigation.** Mitigation is required for proposed adverse impacts and increased risks due to alteration of geologic hazard areas and shall be sufficient to result in no increased risk of the hazard consistent with the development standards in SMC 20.240.224. Mitigation plans shall be submitted as part of the required critical area report, consistent with the requirements of SMC 20.240.080, 20.240.082, and 20.240.240, and this section. When revegetation is required as part of the mitigation, then the mitigation plan shall meet the standards of SMC 20.240.350(H), excluding those standards that are wetland specific.

B. **Preference of Mitigation Actions.** Methods to achieve mitigation for alterations of geologic hazard areas shall be approached in the following order of preference:

1. **Protection.** Mitigation measures that increase the protection of the identified geologic hazard areas include, but are not limited to:

a. Increased or enhanced buffers;

b. Setbacks for permanent and temporary structures;

c. Reduced project scope; and

d. Retention of existing vegetation.

2. **Restoration.** Restoration of native vegetation.

3. **Engineered Stabilization.** Engineered design of geologic hazard stabilization to ensure no increased risk of the hazard due to the proposal with preference for bioengineering over structural engineered solutions.

C. **Performance Standards.** The following performance standards shall apply to any mitigation for development proposed within geologic hazard areas:

1. Geotechnical studies shall be prepared by a qualified professional to identify and evaluate potential hazards and to formulate mitigation measures;

2. Construction methods will reduce or not adversely affect geologic hazards;

3. Site planning to minimize disruption of existing topography and natural vegetation;

4. Significant trees shall be preserved, unless removal is unavoidable or otherwise allowed under the provisions of this chapter;

5. Minimize impervious surface coverage;

6. Replant disturbed areas as soon as feasible pursuant to an approved landscape plan. When planting is required, the following standards shall apply:

a. Native species, indigenous to the region, shall be used in any landscaping of disturbed or undeveloped areas and in any enhancement of habitat or buffers;

b. Plant selection shall be consistent with the existing or projected site conditions, including slope aspect, moisture, and shading;

c. Plants should be commercially available or available from local sources;

d. Plant species high in food and cover value for fish and wildlife shall be used;

e. Mostly perennial species should be planted;

f. Committing significant areas of the site to species that have questionable potential for successful establishment shall be avoided;

g. Plant selection, densities, and placement of plants shall be determined by a qualified professional and shown on the design plans;

h. Stockpiling soil and construction materials should be confined to upland areas and contract specifications should limit stockpiling of earthen materials to durations in accordance with City clearing and grading standards, unless otherwise approved by the City;

i. Planting instructions shall be submitted which describe placement, diversity, and spacing of seeds, tubers, bulbs, rhizomes, sprigs, plugs, and transplanted stock;

j. Controlled release fertilizer shall be applied (if required) at the time of planting and afterward only as plant conditions warrant as determined during the monitoring process;

k. An irrigation system shall be installed, if necessary, for the initial establishment period; and

l. The heterogeneity and structural diversity of vegetation shall be emphasized in landscaping;

7. Clearing and grading regulations as set forth by the City, in SMC 20.50.290 through 20.50.370, shall be followed;

8. The use of retaining walls that allow maintenance of existing natural slope areas are preferred over graded slopes;

9. All construction specifications and methods shall be approved by a qualified professional and the City;

10. Construction management shall be provided by a qualified professional. Ongoing work on site shall be inspected by the City;

11. Site drainage design and temporary erosion and sedimentation controls, pursuant to an approved stormwater pollution prevention plan consistent with the adopted stormwater manual, shall be implemented during and after construction;

12. Undevelopable geologic hazard areas larger than one-half acre shall be placed in a separate tract, provided this requirement does not make the lot nonconforming;

13. A monitoring program shall be prepared for construction activities permitted in geologic hazard areas; and

14. Development shall not increase instability, create a hazard to the site or adjacent properties, or result in a significant increase in sedimentation or erosion and adequate mitigation shall be incorporated into the project design to comply with the requirements of SMC 20.240.224 and 20.240.230.

Subchapter 3.

Fish and Wildlife Habitat Conservation Areas

20.240.260 Fish and wildlife habitat – Description and purpose.

A. Fish and wildlife habitat conservation areas (or habitat conservation areas) are lands managed for maintaining populations of species in suitable habitats within their natural geographic distribution so that the habitat available is sufficient to support viable populations over the long term and isolated subpopulations are not created. Fish and wildlife habitat conservation areas include areas with which State and Federal designated threatened, endangered, and sensitive species have a primary association as well as priority species and habitats listed by the Washington State Department of Fish and Wildlife, including corridors which connect priority habitat, and those areas which provide habitat for species of local significance, which have been or may be identified in the City of Shoreline Comprehensive Plan. Fish and wildlife habitat conservation areas also include stream areas and buffers which provide important habitat corridors; help maintain water quality; store and convey stormwater and

floodwater; recharge ground water; and serve as areas for recreation, education, scientific study, and aesthetic appreciation.

B. The purpose of fish and wildlife habitat conservation areas shall be to protect and conserve the habitat of fish and wildlife species and thereby maintain or increase their populations. The primary purpose of this section is to minimize development impacts to fish and wildlife habitat conservation areas and to:

1. Protect Federal and State listed habitats and species and give special attention to protection and enhancement of anadromous fish populations; and

2. Maintain a diversity of species and habitat within the City; and

3. Coordinate habitat protection to maintain and provide habitat connections; and

4. Help maintain air and water quality and control erosion.

20.240.270 Fish and wildlife habitat – Classification and designation.

A. The City designates the following fish and wildlife habitat conservation areas that meet one or more of the criteria in subsection B of this section, regardless of any formal identification, as critical area, and, as such, these areas are subject to the provisions of this chapter. These areas shall be managed consistent with best available science; including the Washington State Department of Fish and Wildlife's Management Recommendations for Priority Habitat and Species. The following fish and wildlife habitat conservation areas are specifically designated, and this designation does not preclude designation of additional areas as consistent with the criteria in subsection B of this section:

1. All regulated streams and wetlands and their associated buffers as determined by a qualified specialist.

2. The waters, bed and shoreline of Puget Sound up to the ordinary high water mark.

B. Fish and wildlife habitat conservation areas are those areas designated by the City based on review of the best available science; input from Washington Department of Fish and Wildlife, Washington Department of Ecology, U.S. Army Corps of Engineers, and other agencies; and any of the following criteria:

1. **Areas Where State or Federally Designated Endangered, Threatened, and Sensitive Species Have a Primary Association.**

a. Federally designated endangered and threatened species are those fish and wildlife species identified by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service that are in danger of extinction or threatened to become endangered. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service should be consulted for current listing status. Federally designated endangered and threatened species known to be identified and mapped by the Washington State Department of Wildlife in Shoreline include, but may not be limited to, the following:

i. Chinook (Oncorhynchus tshawytscha);

ii. Southern resident orca or killer whales (Orcinus orca).

b. State designated endangered, threatened, and sensitive species are those fish and wildlife species native to the State of Washington that are in danger of extinction, threatened to become endangered, vulnerable, or declining and are likely to become endangered or threatened in a significant portion of their range within the State without cooperative management or removal of threats as identified by the Washington State Department of Fish and Wildlife. State designated endangered, threatened, and sensitive species are periodically recorded in WAC 232-12-014 (State endangered species) and WAC 232-12-011 (State threatened and sensitive species). The State Department of Fish and Wildlife maintains the most current listing and should be consulted for current listing status. State designated endangered, threatened, and sensitive species known to be identified and mapped by the Department of Fish and Wildlife in Shoreline include, but may not be limited to, the following:

i. Northern goshawk (Accipiter gentilis);

ii. Purple martin (Progne subis).

2. **State Priority Habitats and Species.** Priority habitats and species are considered to be priorities for conservation and management. Priority species require protective measures for their perpetuation due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority habitats are those habitat types or elements with unique or significant value to a diverse assemblage of species. A priority

habitat may consist of a unique vegetation type or dominant plant species, a described successional stage, or a specific structural element. Priority habitats and species are identified by the State Department of Fish and Wildlife (DFW) in the Priority Habitats and Species List. Priority habitats and species known to be identified and mapped by the Department of Fish and Wildlife in Shoreline include, but may not be limited to, the following:

a. Biodiversity areas and corridors identified and mapped along Boeing Creek and in and around Innis Arden Reserve Park;

b. Chinook/fall chinook (Oncorhynchus tshawytscha);

c. Coho (Oncrhynchus kisutch);

d. Dungeness crab (Cancer magister);

e. Estuarine intertidal aquatic habitat;

f. Geoduck (Panopea abrupta);

g. Northern goshawk (Accipiter gentilis);

h. Pacific sand lance (Ammodytes hexapterus);

i. Purple martin (Progne subis);

j. Resident coastal cutthroat (Oncorhynchus clarki);

k. Surf smelt (Hypomesus pretiosus); and

l. Winter steelhead (Oncorhynchus mykiss).

3. **Commercial and Recreational Shellfish Areas.** These areas include all public and private tidelands or bedlands suitable for shellfish harvest, including shellfish protection districts established pursuant to Chapter 90.72 RCW.

4. Kelp and eelgrass beds and herring and smelt spawning areas.

5. **Waters of the State.** Waters of the State include lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses

within the jurisdiction of the State of Washington, as classified in WAC 222-16-030. Streams are those areas where surface waters produce a defined channel or bed, not including irrigation ditches, canals, storm or surface water runoff devices or other entirely artificial watercourses, unless such watercourses are used by fish or are used to convey streams naturally occurring prior to construction. A channel or bed need not contain water year-round; provided, that there is evidence of at least intermittent flow during years of normal rainfall. Streams shall be classified in accordance with the Washington Department of Natural Resources water typing system (WAC 222-16-030) hereby adopted in its entirety by reference and summarized as follows:

a. Type S: streams inventoried as "shorelines of the State" under Chapter 90.58 RCW and the rules promulgated pursuant to Chapter 90.58 RCW;

b. Type F: streams which contain fish habitat. Not all streams that are known to exist with fish habitat support anadromous fish populations, or have the potential for anadromous fish occurrence because of obstructions, blockages or access restrictions resulting from existing conditions. Therefore, in order to provide special consideration of and increased protection for anadromous fish in the application of development standards, shoreline streams shall be further classified as follows:

i. **Anadromous Fish-Bearing Streams (Type F-Anadromous).** These streams include:

(A) Fish-bearing streams where naturally recurring use by anadromous fish populations has been documented by a government agency;

(B) Streams that are fish passable or have the potential to be fish passable by anadromous populations, including those from Lake Washington or Puget Sound, as determined by a qualified professional based on review of stream flow, gradient and natural barriers (i.e., natural features that exceed jumping height for salmonids), and criteria for fish passability established by the Washington Department of Fish and Wildlife; and

(C) Streams that are planned for restoration in a six-year capital improvement plan adopted by a government agency or planned for removal of the private

dams that will result in a fish-passable connection to Lake Washington or Puget Sound; and

ii. **Nonanadromous Fish-Bearing Streams (Type F-Nonanadromous).** These include streams which contain existing or potential fish habitat, but do not have the potential for anadromous fish use due to natural barriers to fish passage, including streams that contain resident or isolated fish populations.

The general areas and stream reaches with access for anadromous fish are indicated in the City of Shoreline Stream and Wetland Inventory and Assessment (2004) and basin plans. The potential for anadromous fish access shall be confirmed in the field by a qualified professional as part of a critical area report;

c. Type Np: perennial nonfish habitat streams;

d. Type Ns: seasonal nonfish habitat streams; and

e. Piped stream segments: those segments of streams, regardless of their type, that are fully enclosed in an underground pipe or culvert.

20.240.272 Fish and wildlife habitat – Mapping.

A. **Mapping.** The approximate location and extent of fish and wildlife habitat areas are shown in the data layers maintained in the City of Shoreline geographic information system (GIS). In addition, the following maps and inventories are hereby adopted by reference as amended:

1. Washington Department of Fish and Wildlife Priority Habitat and Species maps;

2. Washington State Department of Natural Resources Official Water Type Reference maps;

3. Washington State Department of Natural Resources Puget Sound Intertidal Habitat Inventory maps;

4. Washington State Department of Natural Resources Shorezone Inventory;

5. Washington State Department of Natural Resources Natural Heritage Program mapping data;

6. Washington State Department of Health Annual Inventory of Shellfish Harvest Areas;

7. Anadromous and resident salmonid distribution maps contained in the Habitat Limiting Factors reports published by the Washington State Conservation Commission; and

8. Washington State Department of Natural Resources State Natural Area Preserves and Natural Resource Conservation Area maps.

B. The inventories and cited maps and resources are to be used as a guide for the City of Shoreline, project applicants, and/or property owners, and may be continuously updated as new fish and wildlife habitat conservation areas are identified or critical area reports are submitted for known fish and wildlife habitat conservation areas. The inventories, maps, and resources are a reference and do not provide a final critical area designation.

20.240.274 Fish and wildlife habitat – General development standards.

A. Development activities and uses shall be prohibited in fish and wildlife habitat conservation areas and associated buffers, except as provided for in this subchapter. Unless allowed under SMC 20.240.040, subsection C of this section, or SMC 20.240.276, development activities and uses that result in alteration of fish and wildlife habitat conservation areas shall be subject to the shoreline variance provisions of 20.220.040.

B. Any proposed alterations permitted, consistent with shoreline variance review, to fish and wildlife habitat conservation area shall require the preparation of a habitat conservation area mitigation plan (commonly referred to as a habitat management plan) to mitigate for the adverse impacts of the proposal, consistent with the recommendations specific to the habitat or species of the Washington State Department of Fish and Wildlife Priority Habitat Program. The habitat management plan shall be prepared by a qualified professional and reviewed and approved by the City, consistent with the standards for mitigation plans in SMC 20.240.082 and 20.240.300.

C. **Activities Allowed in Fish and Wildlife Habitat Conservation Areas.** The activities listed below are allowed in fish and wildlife habitat conservation areas pursuant to SMC 20.240.040, Allowed activities, and subject to applicable permit approvals. These activities do not require the submission of a critical area report and are exempt from monitoring and financial guarantee requirements, except where such activities result in a loss of the functions and values of a fish and wildlife habitat conservation area. These activities include:

1. Conservation or preservation of soil, water, vegetation, fish, shellfish, and/or other wildlife that does not entail changing the structure or functions of the existing habitat conservation area.

2. The harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops and provided the harvesting does not require tilling of soil, planting of crops, chemical applications, or alteration of the fish and wildlife habitat conservation area by changing existing topography, water conditions, or water sources.

3. Permitted alteration to a legally constructed structure existing within a fish and wildlife habitat conservation area buffer that does not increase the footprint of the development or hardscape or increase the impact to a fish and wildlife habitat conservation area, consistent with SMC 20.220.150.

4. Clearing, grading, and the construction of fences and arbors are allowed within the required 10-foot stream buffers for a piped stream segment. if no other critical area or buffer is present.

D. **Nonindigenous Species.** No plant, wildlife, or fish species not indigenous to the region shall be introduced into a fish and wildlife habitat conservation area unless authorized by a State or Federal permit or approval.

E. **Mitigation and Contiguous Corridors.** Mitigation sites shall be located to preserve or achieve contiguous wildlife habitat corridors in accordance with a mitigation plan that is part of an approved critical area report to minimize the isolating effects of development on habitat areas, so long as mitigation of aquatic habitat is located within the same aquatic ecosystem as the area disturbed.

F. **Approvals of Activities.** The Director shall condition approvals of development activities allowed within or adjacent to a fish and wildlife habitat conservation area, as necessary to minimize or mitigate any potential adverse impacts. Conditions shall be based on the best available science and may include, but are not limited to, the following:

1. Establishment of buffers;

2. Preservation of important vegetation and/or habitat features such as snags and downed wood specific to the priority wildlife species in the fish and wildlife habitat conservation area;

3. Limitation of access to the habitat area, including fencing to deter unauthorized access;

4. Seasonal restriction of construction activities;

5. Establishment of a duration and timetable for periodic review of mitigation activities; and

6. Requirement of a performance bond, when necessary, to ensure completion and success of proposed mitigation.

G. **Mitigation and Equivalent or Greater Shoreline Ecological Functions.** Mitigation of alterations to fish and wildlife habitat conservation areas shall achieve equivalent or greater shoreline ecological, biological, and hydrologic functions and shall include mitigation for adverse impacts upstream from, downstream from, or within the same shoreline reach as the development proposal site. Mitigation shall address each function affected by the alteration to achieve functional equivalency or improvement on a per function basis. Mitigation shall be located on site except when demonstrated that a higher level of ecological functioning would result from an off-site location. Mitigation shall be detailed in a fish and wildlife habitat conservation area mitigation plan, consistent with the requirements of SMC 20.240.300.

H. **Approvals and the Best Available Science.** Any approval of alterations or impacts to a fish and wildlife habitat conservation area shall be supported by the best available science.

I. **Buffers.**

1. **Establishment of Buffers.** The Director shall require the establishment of buffer areas for activities adjacent to fish and wildlife habitat conservation areas in order to protect fish and wildlife habitat conservation areas. Buffers shall consist of an undisturbed area of native vegetation or areas identified for restoration established to protect the integrity, functions, and values of the affected habitat. Required buffer widths shall reflect the sensitivity of the habitat and the type and intensity of human activity proposed to be conducted nearby and shall be consistent with the applicable management recommendations issued by the Washington Department of Fish and Wildlife.

2. **Seasonal Restrictions.** When a species is more susceptible to adverse impacts during specific periods of the year, seasonal restrictions may apply. Larger buffers may be required and activities may be further restricted during the specified season.

3. **Habitat Buffer Averaging.** The Director may allow the recommended fish and wildlife habitat area buffer width to be reduced in accordance with a critical area report, the best available science, and the applicable management recommendations issued by the Washington Department of Fish and Wildlife, only if:

a. It will not reduce stream or habitat functions;

b. It will not adversely affect fish and wildlife habitat;

c. It will provide additional natural resource protection, such as buffer enhancement;

d. The total area contained in the buffer area after averaging is no less than that which would be contained within the standard buffer; and

e. The buffer width is not reduced by more than 25 percent in any location.

J. **Signs and Fencing of Fish and Wildlife Habitat Conservation Areas.**

1. **Temporary Markers.** The outer perimeter of the fish and wildlife habitat conservation area or buffer and the clearing limits identified by an approved permit or authorization shall be marked in the field with temporary “clearing limits” fencing in such a way as to ensure that no unauthorized intrusion will occur. The marking is subject to inspection by the Director prior to the commencement of permitted activities during the preconstruction meeting required under SMC 20.50.330(E). This temporary marking and fencing shall be maintained throughout construction and shall not be removed until permanent signs, if required, are in place.

2. **Permanent Signs.** As a condition of any permit or authorization issued pursuant to this chapter, the Director may require the applicant to install permanent signs along the boundary of a fish and wildlife habitat conservation area or buffer, when recommended in a critical area report or otherwise required by the provisions of this chapter.

a. Permanent signs shall be made of an enamel-coated metal face and attached to a metal post or another material of equal durability and nonhazardous. Signs shall be posted at an interval of one per lot or every 50 feet, whichever is less, and shall be maintained by the property owner in perpetuity. The signs shall be worded consistent

with the text specified in SMC 20.240.110 or with alternative language approved by the Director.

b. The provisions of subsection (J)(2)(a) of this section may be modified as necessary to assure protection of sensitive features or wildlife.

3. **Fencing.** Fencing installed as part of a proposed activity or as required in this subsection shall be designed so as to not interfere with species migration, including fish runs, and shall be constructed in a manner that minimizes habitat impacts. Permanent fencing shall be required at the outer edge of the fish and wildlife habitat conservation area buffer under the following circumstances; provided, that the Director may waive this requirement:

a. As part of any development proposal for subdivisions, short plats, multifamily, mixed use, and commercial development where the Director determines that such fencing is necessary to protect the shoreline ecological functions of the fish and wildlife habitat conservation area; provided, that breaks in permanent fencing may be allowed for access to allowed uses (subsection C of this section and SMC 20.240.280(D));

b. As part of development proposals for public and private parks where the adjacent proposed use is active recreation and the Director determines that such fencing is necessary to protect the shoreline ecological functions of the fish and wildlife habitat conservation area;

c. When buffer averaging is part of a development proposal; or

d. At the Director's discretion, to protect the shoreline ecological functions of the fish and wildlife habitat conservation area, as demonstrated in a critical area report. If found to be necessary, the Director shall condition any permit or authorization issued pursuant to this chapter to require the applicant to install a permanent fence at the edge of the fish and wildlife habitat conservation area or buffer, when fencing will prevent future impacts to the fish and wildlife habitat conservation area.

e. The applicant shall be required to install a permanent fence around the fish and wildlife habitat conservation area or buffer when domestic grazing animals, only as allowed under SMC 20.40.240, are present or may be introduced on site.

K. **Subdivisions.** The subdivision and short subdivision of land in fish and wildlife habitat conservation areas and associated buffers is subject to the following:

1. Land that is located wholly within a fish and wildlife habitat conservation area or its buffer may not be subdivided;

2. Land that is located partially within a fish and wildlife habitat conservation area or its buffer may be divided; provided, that the developable portion of each new lot and its access is located outside of the fish and wildlife habitat conservation area or its buffer. The final lots shall each meet the minimum lot size requirements of SMC 20.50.020.

3. Access roads and utilities serving the proposed subdivision may be permitted within the fish and wildlife habitat conservation area and associated buffers only if the applicant's qualified professional(s) demonstrate, and the City determines, that no other feasible alternative exists, all unavoidable impacts are fully mitigated, and the use is consistent with this chapter.

20.240.276 Fish and wildlife habitat – Specific habitat development standards.

In addition to the provisions in SMC 20.240.274, the following development standards apply to the specific habitat types identified below:

A. **Endangered, Threatened, and Sensitive Species.**

1. No development shall be allowed within a fish and wildlife habitat conservation area or buffer with which State or Federally endangered, threatened, or sensitive species have a primary association, except that which is provided for by a management plan established by the Washington Department of Fish and Wildlife or applicable State or Federal agency.

2. Whenever activities are proposed adjacent to a fish and wildlife habitat conservation area with which State or Federally endangered, threatened, or sensitive species have a primary association, such area shall be protected through the application of protection measures in accordance with a critical area report prepared by a qualified professional and approved by the City. Approval for alteration of the fish and wildlife habitat conservation area or its buffer shall not occur prior to consultation with the Washington Department of Fish and Wildlife for animal species, the Washington State Department of Natural Resources for plant species, and other appropriate Federal or State agencies.

B. **Anadromous Fish.**

1. All activities, uses, and alterations proposed to be located in water bodies used by anadromous fish or in areas that affect such water bodies shall give special consideration to the preservation and enhancement of anadromous fish habitat, including, but not limited to, adhering to the following standards:

a. Subsection A of this section applies to anadromous fish where those populations are identified as endangered, threatened or sensitive species;

b. Activities shall be timed to occur only during the allowable work window as designated by the Washington Department of Fish and Wildlife for the applicable species;

c. An alternative alignment or location for the activity is not feasible;

d. The activity is designed so that it will not degrade the shoreline ecological function of the fish habitat or other critical areas;

e. Shoreline erosion control measures shall be designed to use bioengineering methods or soft armoring techniques, according to an approved critical area report; and

f. Any impacts to the shoreline ecological function of the fish and wildlife habitat conservation area are mitigated in accordance with an approved critical area report.

2. Structures that prevent migration shall not be allowed in the portion of water bodies currently or historically used by anadromous fish. Fish bypass facilities shall be provided, consistent with RCW 77.57.030, that allow the upstream migration of adult fish and prevent fry and juveniles migrating downstream from being trapped or harmed.

3. Fills, when authorized by the City and all applicable joint aquatic resource permit application approvals, shall not adversely impact anadromous fish or their habitat or shall mitigate any unavoidable impacts and shall only be allowed for a water-dependent use.

C. **Wetland Habitats.** All proposed activities within or adjacent to fish and wildlife habitat conservation areas containing wetlands shall conform to the wetland development performance standards set forth in Chapter 20.240 SMC, Subchapter 4, Wetlands. If nonwetlands habitat and

wetlands are present at the same location, the provisions of this subchapter or the Wetlands subchapter, whichever provides greater protection to the habitat, apply.

D. **Streams.** Activities, uses and alterations of streams shall be prohibited, subject to the shoreline variance provisions (SMC 20.220.040), unless otherwise allowed by the allowed activities provisions of this chapter. No alteration to a stream buffer shall be permitted unless consistent with the provisions of this chapter and the specific standards for development outlined below.

1. **Type S and Type F-Anadromous Streams.** Development activities and uses that result in alteration of Type S and Type F-anadromous streams and their associated buffers shall be prohibited subject to the shoreline variance provisions of SMC 20.220.040.

2. **Type F-Nonanadromous and Type Np Streams.** Development activities and uses that result in alteration of Type F-nonanadromous and Type Np streams are prohibited subject to the shoreline variance provisions of SMC 20.220.040.

3. **Type Ns Streams.** Development activities and uses that result in unavoidable impacts may be permitted in Type Ns streams and associated buffers in accordance with an approved critical area(s) report and compensatory mitigation plan, and only if the proposed activity is the only reasonable alternative that will meet the purpose and intent of the regulations. Full compensation for the loss of acreage and functions of streams and buffers shall be provided in compliance with the mitigation performance standards and requirements of these regulations.

4. **Stream Crossing.** Crossing of streams may be permitted based on the findings in a critical area report, subject to the limitations in subsections (D)(1), (2), and (3) of this section, and consistent with the following:

a. **Bridges.** Bridges shall be used to cross Type S and Type F-anadromous streams. Culverted crossings and other obstructive means of crossing Type S and Type F-anadromous streams shall be prohibited; and

b. **Culverts.** Culverts are allowed for crossing of Type F-nonanadromous, Np, and Ns streams when fish passage will not be impaired and when the following design criteria and conditions are met:

i. Oversized culverts, that allow for fish passage and floodplain or wetland connectivity, will be installed;

ii. Culverts for Type F streams shall be designed for fish passage that will allow natural stream functions and processes to occur (i.e., sediment, wood, and debris transport) where appropriate;

iii. Gravel substrate will be placed in the bottom of the culvert to a minimum depth of one foot for Type F streams;

iv. A maintenance covenant shall be recorded on title with King County that requires the property owner to, at all times, keep any culvert free of debris and sediment to allow free passage of water and, if applicable, fish; and

v. The City may require that a culvert be removed from a stream as a condition of approval, unless it is demonstrated conclusively that the culvert is not detrimental to fish habitat or water quality, or removal would be detrimental to fish or wildlife habitat or water quality.

5. **Relocation.** Relocation of a Type S, F, or Np stream may be allowed, subject to the limitations in subsections (D)(1) and (2) of this section, and only when the proposed relocation is part of an approved mitigation or rehabilitation plan, will result in equal or better habitat and water quality, and will not diminish the flow capacity of the stream. Relocation of a Type Ns stream may be allowed, subject to the limitation in subsection (D)(3) of this section, and only when the proposed relocation will result in equal or better habitat and water quality and will not diminish the flow capacity of the stream.

6. **Restoring Piped Watercourses.** The City allows the voluntary opening of previously channelized/culverted streams and the rehabilitation and restoration of streams. Restoring piped watercourses may be approved, consistent with the following:

a. When piped watercourse sections are restored, a protective buffer shall be required of the stream section. The buffer distance shall be consistent with the buffer relief that may be granted consistent with SMC 20.240.056, Voluntary critical area restoration projects. The stream and buffer area shall include habitat improvements and measures to prevent erosion, landslide, and water quality impacts. Opened channels shall be designed to support fish and wildlife habitat and uninhibited fish access, unless

determined to be unfeasible as demonstrated in a restoration plan reviewed and approved by the City;

b. Removal of pipes conveying streams shall only occur when the City determines that the proposal will result in an improvement of water quality and ecological functions and will not significantly increase the threat of erosion, flooding, slope stability, or other hazards; and

c. Where the buffer of the restored stream would extend onto an adjacent property, the applicant shall obtain a written agreement from the affected neighboring property owner prior to the City approving the restoration of the piped watercourse.

E. **Priority Species.** Fish and wildlife habitat conservation areas or buffers with Priority Species shall be subject to the following:

1. Development activities and uses that result in unavoidable impacts may be permitted in priority species habitat areas and associated buffers in accordance with an approved critical area(s) report and habitat management plan, and only if the proposed activity is the only reasonable alternative that will meet the purpose and intent of the regulations. Full compensation for the loss of acreage and functions of habitat and buffer areas shall be provided in compliance with the mitigation performance standards and requirements of these regulations.

20.240.280 Fish and wildlife habitat – Required buffer areas.

A. Buffer widths for fish and wildlife habitat areas shall be based on consideration of the following factors: species-specific recommendations of the Washington State Department of Fish and Wildlife; recommendations contained in a habitat management plan submitted by a qualified professional; and the nature and intensity of land uses and activities occurring on the land adjacent to the site.

B. Low-impact uses and activities which are consistent with the purpose and function of the habitat buffer and do not detract from its integrity may be permitted within the buffer depending on the sensitivity of the habitat area. Examples of uses and activities which may be permitted in appropriate cases include trails that are pervious, viewing platforms, low-impact stormwater management facilities such as bioswales and other similar uses and activities; provided, that any impacts to the buffer resulting from such permitted facilities shall be fully mitigated.

C. **Standard Required Stream Buffer Widths.** Buffer widths shall reflect the sensitivity of the stream type, the risks associated with development and, in those circumstances permitted by these regulations, the type and intensity of human activity and site design proposed to be conducted on or near the stream area. Stream buffers shall be measured from the ordinary high water mark (OHWM) or the top of the bank, if the OHWM cannot be determined. Buffers shall be measured with rounded ends where streams enter or exit piped segments.

1. The following buffers are established for streams based upon the Washington State Department of Natural Resources water typing system and further classification based on anadromous or nonanadromous fish presence for the Type F streams:

Table 20.240.280(1)

Stream Type	**Standard Buffer Width (ft)**
Type S	150
Type F-anadromous	115
Type F-nonanadromous	75
Type Np	65
Type Ns	45
Piped Stream Segments	10

2. **Increased Stream Buffer Widths.** The recommended stream buffer widths shall be increased, as follows:

a. When the qualified professional determines that the recommended width is insufficient to prevent habitat degradation and to protect the structure and functions of the habitat area;

b. When the flood hazard area exceeds the recommended stream buffer width, the stream buffer area shall extend to the outer edge of the flood hazard area;

c. When a channel migration zone is present, the stream buffer width shall be measured from the outer edge of the channel migration zone;

d. When the habitat area is in an area of high blowdown potential, the stream buffer width shall be expanded an additional 50 feet on the windward side; or

e. When the habitat area is within an erosion or landslide hazard area, or buffer, the stream buffer width shall be the recommended distance, or the erosion or landslide hazard area or buffer, whichever is greater.

3. **Stream Buffer Width Averaging with Enhancement.** The Director may allow the recommended stream buffer width to be reduced in accordance with an approved critical area report and the best available science, on a case-by-case basis, by averaging buffer widths. Any allowance for averaging buffer widths shall only be granted based on the development and implementation of a buffer enhancement plan for areas of buffer degradation, consistent with the provisions in subsection (C)(4) of this section. Only those portions of the stream buffer existing within the project area or subject parcel shall be considered in the total buffer area for buffer averaging. Averaging of buffer widths may only be allowed where a qualified professional demonstrates that:

a. The width reduction and buffer enhancement plan provides evidence that the stream or habitat functions, including those of nonfish habitat and riparian wildlife, will be:

i. Increased or maintained through plan implementation for those streams where existing buffer vegetation is generally intact native vegetation; or

ii. Increased through plan implementation for those streams where existing buffer vegetation is inadequate to protect the functions and values of the stream;

b. The total area contained in the buffer area of each stream on the development proposal site is not decreased after averaging;

c. The recommended riparian habitat area width is not reduced by more than 25 percent in any one location; and

d. The width reduction will not be located within another critical area or associated buffer.

4. **Stream Buffer Enhancement Measures.** The measures determined most applicable and/or appropriate will be considered in buffer averaging requirements. These include but are not limited to:

a. Removal of fish barriers to restore accessibility to fish.

b. Enhancement of fish habitat using log structures incorporated as part of a fish habitat enhancement plan.

c. Enhancement of fish and wildlife habitat structures that are likely to be used by wildlife, including wood duck houses, bat boxes, nesting platforms, snags, rootwads/stumps, birdhouses, and heron nesting areas.

d. Additional enhancement measures may include:

i. Planting native vegetation within the buffer area, especially vegetation that would increase value for fish and wildlife, increase stream bank or slope stability, improve water quality, or provide aesthetic/recreational value; or

ii. Creation of a surface channel where a stream was previously underground, in a culvert or pipe. Surface channels which are “daylighted” shall be located within a buffer area and shall be designed with energy dissipating functions or channel roughness features such as meanders and rootwads to reduce future bank failures or nearby flooding;

iii. Removal or modification of existing stream culverts (such as at road crossings) to improve fish passage, stream habitat, and flow capabilities; or

iv. Upgrading of retention/detention facilities or other drainage facilities beyond required levels.

D. **Stream Buffer Allowed Uses and Alteration.** Activities and uses shall be prohibited in stream buffers, except as provided for in this chapter. Stream buffers shall be maintained as undisturbed or restored natural vegetation. No clearing or grading activities are allowed within required stream buffers except as allowed under SMC 20.240.040, 20.240.274, or consistent with an approved buffer enhancement plan consistent with the provisions of this subchapter. No structures or improvements shall be permitted within the stream buffer area, including buildings,

decks, docks, except as otherwise permitted or required under this chapter, or under one of the following circumstances:

1. **Approved Mitigation.** When the improvements are part of an approved rehabilitation or mitigation plan; or

2. **Trails.** Construction of trails over and in the buffer of piped stream segments, and the construction of trails near other stream segments, consistent with the following criteria:

a. Trails should be constructed of pervious surface, with preference for natural materials. Raised boardwalks utilizing nontreated pilings may be acceptable;

b. Trails shall be designed in a manner that minimizes impact on the stream system;

c. Trails shall have a maximum trail corridor width of five feet; and

d. Trails should be located within the outer 25 percent of the buffer, i.e., that portion of the buffer that is farther away from the stream and located to avoid removal of significant trees; or

3. **Footbridges.** Construction of footbridges that minimize the impact to the stream system; or

4. **Informational Signs.** Construction and placement of informational signs or educational demonstration facilities limited to no more than one square yard surface area and four feet high, provided there is no permanent infringement on stream flow; or

5. **Stormwater Management Facilities.** Establishment of low-impact stormwater management facilities, such as stormwater dispersion outfalls and bioswales, may be allowed within stream buffers consistent with the adopted stormwater manual; provided, that:

a. No other location is feasible;

b. Pipes and conveyance facilities only in the outer 25 percent of the standard buffer area as set forth in Table 20.240.280(1);

c. Stormwater dispersion outfalls, bioswales, bioretention facilities, and other low-impact facilities consistent with the adopted stormwater manual may be allowed anywhere within stream buffers when determined by a qualified professional that the location of the facility will enhance the buffer area and protect the stream; and

d. Such facilities are designed consistent with the requirements of SMC 20.70.330.

6. **Development Proposals within Physically Separated and Functionally Isolated Stream Buffers.** Consistent with the definition of "buffers" (SMC 20.20.012), areas that are functionally isolated and physically separated from stream due to existing, legally established roadways and railroads or other legally established structures or paved areas eight feet or more in width that occur between the area in question and the stream shall be considered physically isolated and functionally separated stream buffers. Once determined by the Director, based on a submitted critical area report to be a physically separated and functionally isolated stream buffer, development proposals shall be allowed in these areas.

20.240.290 Fish and wildlife habitat – Critical area report requirements.

A. **Report Required.** If the Director determines that the site of a proposed development includes, is likely to include, or is adjacent to a fish and wildlife habitat conservation area, a critical area report shall be required. Critical area report requirements for fish and wildlife habitat conservation areas are generally met through submission to the Director of one or more fish and wildlife habitat critical area reports. In addition to the general critical area report requirements of SMC 20.240.080, critical area reports for fish and wildlife habitat conservation areas shall meet the requirements of this section. Critical area reports for two or more types of critical areas shall meet the report requirements for each relevant type of critical area.

B. **Preparation by a Qualified Professional.** Critical areas reports for a habitat conservation area shall be prepared and signed by a qualified professional who is a biologist, ecologist, or other scientist with the minimum required experience, per SMC 20.20.042, related to the specific type(s) of fish and wildlife habitats identified.

C. **Third Party Review Required.** Critical areas studies and reports on fish and wildlife habitat conservation areas shall be, at the applicant's sole expense, subject to third party review, consistent with SMC 20.240.080(C), and in any of the additional following circumstances:

1. Mitigation is required for impacts to Type S, Type F, or Type Np streams and/or buffers; or

2. Mitigation is required for impacts to Type Ns streams.

D. **Minimum Report Contents for Fish and Wildlife Habitat Conservation Areas.** The critical area written report(s) and accompanying plan sheet(s) shall contain the following information at a minimum:

1. The minimum report contents required per SMC 20.240.080(E);

2. Documentation of any fieldwork performed on the site, including field data sheets for delineations, water typing and other habitat conservation area classification, baseline hydrologic data, site photos, etc.;

3. A description of the methodologies used to conduct the delineations, classifications, or impact analyses, including reference;

4. **Site Plans.** A copy of the site plan sheet(s) for the project shall be included with the written report and shall include, at a minimum:

a. Maps (to scale) depicting delineated and surveyed fish and wildlife habitat conservation areas and required buffers on site, including buffers for off-site critical areas that extend onto the project site; the development proposal; other critical areas; clearing and grading limits; areas of proposed impacts to fish and wildlife habitat conservation areas and/or buffers (include square footage estimates); and

b. A depiction of the proposed stormwater management facilities and outlets (to scale) for the development, including estimated areas of intrusion into the buffers of any critical areas. The written report shall contain a discussion of the potential impacts to the fish and wildlife habitat conservation areas associated with anticipated hydroperiod alterations from the project;

5. **Habitat Assessment.** A habitat assessment is an investigation of the project area to evaluate the potential presence or absence of designated critical fish or wildlife species or habitat. A critical area report for a fish and wildlife habitat conservation area shall contain an

assessment of habitats including the following site- and proposal-related information at a minimum:

a. Detailed description of vegetation on and adjacent to the project area and its associated buffer;

b. Identification of any species of local importance, priority species, or endangered, threatened, sensitive, or candidate species that have a primary association with habitat on or adjacent to the project area, and assessment of potential project impacts to the use of the site by the species;

c. A discussion of any Federal, State, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the project area;

d. A detailed discussion of the direct and indirect potential impacts on habitat by the project, including potential impacts to water quality;

e. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing habitats and restore any habitat that was degraded prior to the current proposed land use activity and to be conducted in accordance with SMC 20.240.053;

f. A discussion of ongoing management practices that will protect habitat after the project site has been developed, including proposed monitoring and maintenance programs; and

6. **Additional Technical Information Requirements for Streams.** Critical area reports for streams shall be consistent with the specific development standards for streams in SMC 20.240.276 and 20.240.280 and may be met through submission of one or more specific report types. If stream buffer enhancement is proposed to average stream buffer width, a stream buffer enhancement plan shall be submitted in addition to other critical area report requirements of this section. If no project impacts are anticipated and standard stream buffer widths are retained, a stream delineation report, general critical areas report or other reports, alone or in combination, may be submitted as consistent with the specific requirements of this section. In addition to the basic critical area report requirements for fish

and wildlife habitat conservation areas provided in subsections A through C of this section, technical information on streams shall include the following information at a minimum:

a. A written assessment and accompanying maps of the stream and associated hydrologic features on and off site within 200 feet of the project area, including the following information at a minimum:

i. Stream survey showing the field delineated ordinary high water mark(s);

ii. Standard stream buffer boundary;

iii. Boundary for proposed stream buffers averaging, if applicable;

iv. Vegetative, faunal, and hydrologic characteristics;

v. Soil and substrate conditions; and

vi. Topographic elevations, at two-foot contours;

b. A detailed description and functional assessment of the stream buffer under existing conditions pertaining to the protection of stream functions, fish habitat and, in particular, potential anadromous fisheries;

c. A habitat and native vegetation conservation strategy that addresses methods to protect and enhance on-site habitat and stream functions;

d. Proposed buffer enhancement, if needed, including a written assessment and accompanying maps and planting plans for buffer areas to be enhanced, including the following information at a minimum:

i. A description of existing buffer conditions;

ii. A description of proposed buffer conditions and how proposed conditions will increase buffer functions in terms of stream and fish habitat protection;

iii. Performance standards for measuring enhancement success through a monitoring period of at least five years; and

iv. Provisions for monitoring and submission of monitoring reports documenting buffer conditions, as compared to performance standards, for enhancement success;

e. A discussion of ongoing management practices that will protect the shoreline ecological function of the stream through maintenance of vegetation density within the stream buffer.

E. **Additional Information.** When appropriate due to the type of habitat or species present or the project area conditions, the Director may also require the critical area report to include:

1. Where impacts are proposed, mitigation plans consistent with the requirements of SMC 20.240.082 and the fish and wildlife habitat mitigation performance standards and requirements of SMC 20.240.300;

2. Third party review to include any recommendations as appropriate by a qualified professional, under contract with or employed by the City, may be required at the applicant's expense of the critical area report analysis and the effectiveness of any proposed mitigating measures or programs;

3. A request for consultation with the Washington State Department of Fish and Wildlife (DFW), Washington Department of Ecology (Ecology), local Native American Indian tribes or other appropriate agency;

4. Copies of the joint aquatic resource permit application (JARPA) and related approvals, such as a hydraulic project approval (HPA) from the DFW, when applicable to the project; and

5. Detailed surface and subsurface hydrologic features both on and adjacent to the site.

20.240.300 Fish and wildlife habitat – Mitigation performance standards and requirements.

A. **Requirements for Mitigation.** Where impacts cannot be avoided, and the applicant has exhausted all feasible design alternatives, the applicant or property owner shall seek to implement other appropriate mitigation actions in compliance with the intent, standards and criteria of this section. Mitigation provisions shall be applied through the shoreline variance provisions in SMC 20.220.040, unless mitigated alterations are specifically allowed by the provisions of this subchapter. In an individual case, these actions may include consideration of

alternative site plans and layouts, reductions in the density or scope of the proposal, and/or implementation of the performance standards listed in this section.

B. **Additional Requirements for Stream Mitigation.** Significant adverse impacts to the shoreline ecological function of the stream area shall be mitigated. Mitigation actions shall be implemented in the preferred sequence: avoidance, minimization, restoration and replacement. Proposals which include less preferred and/or compensatory mitigation shall demonstrate that:

1. All feasible and reasonable measures will be taken to reduce impacts and losses to the stream, or to avoid impacts where avoidance is required by these regulations;

2. The restored, created or enhanced stream area or buffer will be available and persistent as the stream or buffer area it replaces; and

3. No overall net loss will occur in the shoreline ecological functions of the stream.

C. **Compensating for Lost or Impacted Functions.** Mitigation of alterations to fish and wildlife habitat shall achieve equivalent or greater shoreline ecological, biological, and hydrologic functions and shall include mitigation for adverse impacts upstream or downstream of the development proposal site on a per function basis. Mitigation shall be located on site except when demonstrated that a higher level of ecological functioning would result from an off-site location. A mitigation plan may include the following:

1. Native vegetation planting plan;

2. Retention, enhancement or restoration plan of specific habitat features;

3. Plans for control of nonnative invasive plant or wildlife species; and

4. Stipulations for use of innovative, sustainable building practices.

D. **Preference of Mitigation Actions.** Methods to achieve compensation for the shoreline ecological function of fish and wildlife habitat shall be approached in the following order of preference:

1. **Protection.** Mitigation measures that increase the protection of the identified fish and wildlife habitat conservation areas may include but are not limited to:

a. Increased or enhanced buffers;

b. Setbacks for permanent and temporary structures;

c. Reduced project scope;

d. Limitations on construction hours;

e. Limitations on hours of operation; and/or

f. Relocation of access;

2. **Restoration.** Restoration of degraded habitat.

3. **Creation.** Creation (establishment) of wildlife habitat on disturbed upland sites such as those with vegetative cover consisting primarily of nonnative species. This should be attempted only when the site conditions are conducive to the habitat type that is anticipated in the design.

4. **Enhancement.** Enhancement of significantly degraded habitat in combination with restoration or creation. Enhancement alone will result in a loss of habitat acreage and is less effective at replacing the functions lost. Enhancement should be part of a mitigation package that includes replacing the impacted area and meeting appropriate ratio requirements.

5. **Preservation.** Preservation of high-quality, at-risk fish and wildlife habitat as compensation is generally acceptable when done in combination with restoration, creation, or enhancement; provided, that a minimum of 1:1 acreage replacement is provided by reestablishment or creation. Preservation of high-quality, at-risk fish and wildlife habitat may be considered as the sole means of compensation for habitat impacts when the following criteria are met:

a. Habitat impacts will not have a significant adverse impact on habitat for listed fish, or other ESA-listed species;

b. There is no net loss of habitat functions and values within the watershed or basin;

c. The impact area is small (generally less than one-half acre) and/or impacts are occurring to a low-functioning system; and

d. All preservation sites shall include buffer areas adequate to protect the habitat and its functions and values from encroachment and degradation.

E. **Location and Timing of Stream Mitigation.**

1. Mitigation shall be provided on site, unless on-site mitigation is not scientifically feasible due to the physical features of the property. The burden of proof shall be on the applicant to demonstrate that mitigation cannot be provided on site.

2. When mitigation cannot be provided on site, mitigation shall be provided in the immediate vicinity of the permitted activity on property owned or controlled by the applicant, such as an easement, provided such mitigation is beneficial to the fish and wildlife habitat conservation area and associated resources. It is the responsibility of the applicant to obtain title to off-site mitigation areas. Mitigation may be considered on City-owned property, or on similar publicly owned property for which title is not available, through a City mitigation program if programmatic mitigation areas have been identified by the City.

3. In-kind mitigation shall be provided, except when the applicant demonstrates and the City concurs that greater functional and habitat value can be achieved through out-of-kind mitigation.

4. Only when it is determined by the City that subsections (B)(1), (2), and (3) of this section are inappropriate and impractical shall off-site, in-kind mitigation or off-site, out-of-kind mitigation be considered.

5. When stream mitigation is permitted by this chapter on site or off site, the mitigation project shall occur near an adequate water supply (stream, ground water) with a hydrologic connection to the mitigation area to ensure successful development or restoration.

6. Any agreed-upon mitigation proposal shall be completed prior to project construction, unless a phased schedule that assures completion concurrent with project construction has been approved by the City.

7. Restored or created streams, where permitted by this chapter, shall be an equivalent or higher stream value or function than the altered stream.

F. **Performance Standards.** The following mitigation measures shall be reflected in fish and wildlife habitat conservation area mitigation planning:

1. The maintenance and protection of habitat functions and values shall be considered a priority in site planning and design;

2. Buildings and structures shall be located in a manner that preserves and minimizes adverse impacts to important habitat areas. This may include clustering buildings and locating fences outside of habitat areas;

3. Retained habitat shall be integrated into open space and landscaping;

4. Where possible, habitat and vegetated open space shall be consolidated in contiguous blocks;

5. Habitat shall be located contiguous to other habitat areas, open space, or landscaped areas, both on and off site, to contribute to a continuous system or corridor that provides connections to adjacent habitat areas;

6. When planting is required, the following standards shall apply:

a. Native species, indigenous to the region, shall be used in any landscaping of disturbed or undeveloped areas and in any enhancement of habitat or buffers;

b. Plant selection shall be consistent with the existing or projected site conditions, including slope aspect, moisture, and shading;

c. Plants should be commercially available or available from local sources;

d. Plant species high in food and cover value for fish and wildlife shall be used;

e. Mostly perennial species should be planted;

f. Committing significant areas of the site to species that have questionable potential for successful establishment shall be avoided;

g. Plant selection, densities, and placement of plants shall be determined by a qualified professional and shown on the design plans;

h. Stockpiling soil and construction materials should be confined to upland areas and contract specifications should limit stockpiling of earthen materials to durations in accordance with City clearing and grading standards, unless otherwise approved by the City;

i. Planting instructions shall be submitted which describe placement, diversity, and spacing of seeds, tubers, bulbs, rhizomes, sprigs, plugs, and transplanted stock;

j. Controlled release fertilizer shall be applied (if required) at the time of planting and afterward only as plant conditions warrant as determined during the monitoring process;

k. An irrigation system shall be installed, if necessary, for the initial establishment period;

l. The heterogeneity and structural diversity of vegetation shall be emphasized in landscaping; and

m. Significant trees shall be preserved;

7. All construction specifications and methods shall be approved by a qualified professional and the City; and

8. Construction management shall be provided by a qualified professional. Ongoing work on site shall be inspected by the City.

G. **Mitigation Plan.** Mitigation plans shall be submitted as part of the required critical area report consistent with the requirements of SMC 20.240.080, 20.240.082, and 20.240.290 and this section. When revegetation is required as part of the mitigation, then the mitigation plan shall meet the standards of SMC 20.240.350(H), excluding those standards that are wetland specific.

H. **Monitoring Program and Contingency Plan.** A monitoring program shall be implemented by the applicant to determine the success of the mitigation project and any necessary corrective actions. This program shall determine if the original goals and objectives are being met. The monitoring program will be established consistent with the guidelines contained in SMC 20.240.082(D).

Subchapter 4.

Wetlands

20.240.310 Wetlands – Purpose.

A. Wetlands help to maintain water quality; store and convey stormwater and floodwater; recharge ground water; provide important fish and wildlife habitat; and serve as areas for recreation, education, scientific study and aesthetic appreciation.

B. The City's overall goal shall be to achieve no net loss of wetlands. This goal shall be implemented through retention of the function, value and acreage of wetlands within the City. Wetland buffers serve to moderate runoff volume and flow rates; reduce sediment, chemical nutrient and toxic pollutants; provide shading to maintain desirable water temperatures; provide habitat for wildlife; protect wetland resources from harmful intrusion; and generally preserve the ecological integrity of the wetland area.

C. The primary purpose of the wetland regulations is to avoid detrimental wetland impacts and achieve a goal of no net loss of wetland function, value and acreage; and where possible enhance and restore wetlands.

20.240.320 Wetlands – Designation and rating.

A. **Designation.** All areas meeting the definition of a wetland and identification criteria as wetlands pursuant to SMC 20.240.322, regardless of any formal identification, are hereby designated critical areas and are subject to the provisions of this chapter.

B. **Rating.** All wetlands shall be rated by a qualified professional according to the current Washington State Department of Ecology wetland rating system, as set forth in the Washington State Wetland Rating System for Western Washington 2014 (Ecology Publication No. 014-06-029, or as revised). Wetland rating categories shall be applied as the wetland exists on the date of adoption of the rating system by the City, as the wetland naturally changes thereafter, or as the wetland changes in accordance with permitted activities.

1. **Category I.** Category I wetlands are those that represent unique or rare wetland types, are more sensitive to disturbance than most wetlands, are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime, or provide a high level of functions. The following types of wetlands are Category I:

a. Relatively undisturbed estuarine wetlands larger than one acre;

b. Wetlands of high conservation value that are identified by scientists of the Washington Natural Heritage Program/DNR;

c. Bogs;

d. Mature and old-growth forested wetlands larger than one acre;

e. Wetlands in coastal lagoons; and

f. Wetlands that perform many functions well (scoring 23 points or more based on functions).

2. **Category II.** Category II wetlands are those that are difficult, though not impossible, to replace and provide high levels of some functions. The following types of wetlands are Category II:

a. Estuarine wetlands smaller than one acre, or disturbed estuarine wetlands larger than one acre;

b. Interdunal wetlands larger than one acre or those found in a mosaic of wetlands; and

c. Wetlands with a moderately high level of functions (scoring between 20 and 22 points).

3. **Category III.** Category III wetlands are those with a moderate level of functions, generally have been disturbed in some ways, can often be adequately replaced with a well-planned mitigation project, and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands. The following types of wetlands are Category III:

a. Wetlands with a moderate level of functions (scoring between 16 and 19 points); or

b. Interdunal wetlands between 0.1 and one acre.

4. **Category IV.** Category IV wetlands are those with the lowest levels of functions (scoring below 16 points) and are often heavily disturbed. These are wetlands that should be able to replace, or in some cases to improve. However, experience has shown that replacement

cannot be guaranteed in any specific case. These wetlands may provide some important functions, and also need to be protected.

C. **Illegal Modifications.** Wetland rating categories shall not change due to illegal modifications or alterations. A wetland's category shall be based on the pre-modification/alteration analysis of the wetland.

D. At the time of adoption of the critical area amendments to the City's Master Program, Ordinance 856, there were no identified Category I wetlands identified within the City of Shoreline. If this category of wetland is subsequently identified, any applicable standards may temporarily be used on an interim basis by the Director based on Washington State guidance on protection of the identified type of resource until such time as permanent shoreline regulations can be established.

20.240.322 Wetlands – Mapping and delineation.

A. **Mapping.** The approximate location and extent of wetlands are shown in the wetland data layer maintained in the City of Shoreline geographic information system (GIS). In addition, the following maps and inventories are hereby adopted by reference as amended:

1. City of Shoreline, Basin Characterization Reports and Stream and Wetland Inventory and Assessment, Tetra Tech (May 2004);

2. City of Shoreline stormwater basin plans as completed and updated;

3. Soils maps produced by the U.S. Department of Agriculture, National Resources Conservation Service; and

4. The National Wetlands Inventory, produced by the U.S. Fish and Wildlife Service.

B. **Reference Only.** The inventories and cited resources are to be used as a guide for the City of Shoreline, project applicants, and/or property owners, and may be continuously updated as new wetlands are identified or critical area reports are submitted for known wetlands. These inventories and cited resources are a reference and do not provide a final critical area designation.

C. **Identification and Delineation.** Identification of wetlands and delineation of their boundaries pursuant to this chapter shall be done in accordance with the approved Federal

wetland delineation manual and applicable regional supplements per WAC 173-22-035. The exact location of a wetland's boundary shall be determined through the performance of a field investigation by a qualified professional. Wetland delineations are valid for five years; after such date the Director shall determine whether a revision or additional assessment is necessary.

D. **Pre-assessment.** To facilitate long-range planning using a landscape approach, the Director may identify and pre-assess wetlands using the rating system and establish appropriate wetland buffer widths for such wetlands. The Director will prepare maps of wetlands that have been pre-assessed in this manner.

20.240.324 Wetlands – Development standards.

A. Activities and uses shall be prohibited in wetlands and wetland buffers, except as provided for in this chapter.

B. **Activities Allowed in Wetlands.** The activities listed below are allowed in wetlands pursuant to SMC 20.240.040, Allowed activities, and subject to applicable permit approvals. These activities do not require submission of a critical area report, except where such activities result in a net loss of the shoreline ecological function provided by a wetland or wetland buffer. These activities include:

1. Conservation or preservation of soil, water, vegetation, fish, shellfish, and/or other wildlife that does not entail changing the structure or functions of the existing wetland.

2. The harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops and provided the harvesting does not require tilling of soil, planting of crops, chemical applications, or alteration of the wetland by changing existing topography, water conditions, or water sources.

3. Drilling for utilities/utility corridors under a wetland, with entrance/exit portals located completely outside of the wetland buffer; provided, that the drilling does not interrupt the ground water connection to the wetland or percolation of surface water down through the soil column. Specific studies by a hydrologist are necessary to determine whether the ground water connection to the wetland or percolation of surface water down through the soil column will be disturbed.

4. Enhancement of a wetland through the select removal of nonnative invasive plant species. Removal of invasive plant species shall be restricted to hand labor and handheld

equipment unless permits from the appropriate regulatory agencies have been obtained for approved biological or chemical treatments. Not more than 500 square feet of area may be cleared, as calculated cumulatively over one year, on private property without a permit. All removed plant material shall be taken away from the site and disposed of appropriately. Plants that appear on the Washington State Noxious Weed Control Board list of noxious weeds or the King County Noxious Weed List shall be handled and disposed of according to a noxious weed control plan appropriate to that species. Revegetation with appropriate native species at natural densities is allowed in conjunction with removal of invasive plant species.

5. Permitted alteration to a legally constructed structure existing within a wetland or wetland buffer that does not increase the footprint of the development or hardscape or increase the impact to a wetland or wetland buffer, consistent with SMC 20.220.150.

C. **Category I Wetlands.** Development activities and uses that result in alteration of Category I wetlands and their associated buffers shall be prohibited subject to the shoreline variance provisions of SMC 20.220.040.

D. **Category II and III Wetlands.** Development activities and uses that result in alteration of Category II and III wetlands are prohibited, unless the applicant can demonstrate that:

1. The basic project proposed cannot reasonably be accomplished on another site or sites in the general region while still successfully avoiding or resulting in less adverse impact on a wetland;

2. All on-site alternative designs that would avoid or result in less adverse impact on a wetland or its buffer, such as a reduction to the size, scope, configuration, or density of the project are not feasible; and

3. Full compensation for the loss of acreage and functions and values of wetland and buffers due to unavoidable impacts shall be provided in compliance with the mitigation performance standards and requirements of this chapter.

E. **Category IV Wetlands, Except Small Hydrologically Isolated Wetlands.** Development activities and uses that result in unavoidable impacts may be permitted in Category IV wetlands and associated buffers in accordance with an approved critical area(s) report and compensatory mitigation plan, and only if the proposed activity is the only reasonable alternative that will meet

the purpose and intent of the regulations. Full compensation for the loss of acreage and functions and values of wetland and buffers shall be provided in compliance with the mitigation performance standards and requirements of these regulations.

F. **Small, Hydrologically Isolated Category IV Wetlands.** The Director may allow small, hydrologically isolated Category IV wetlands to be exempt from the avoidance sequencing provisions of SMC 20.240.053 and subsection D of this section and allow alteration of such wetlands; provided, that a submitted critical area report and mitigation plan provides evidence that all of the following conditions are met:

1. The wetland is less than 1,000 square feet in area;

2. The wetland is a low quality Category IV wetland with a habitat score of less than three points in the adopted rating system;

3. The wetland does not contain habitat identified as essential for local populations of priority species identified by the Washington Department of Fish and Wildlife or species of local importance which are regulated as fish and wildlife habitat conservation areas in Chapter 20.240, Subchapter 3;

4. The wetland is not associated with riparian areas or buffers;

5. The wetland is not part of a wetland mosaic; and

6. A mitigation plan to replace lost wetland functions and values is developed, approved, and implemented consistent with SMC 20.240.350.

G. **Subdivisions.** The subdivision and/or short subdivision of land in wetlands and associated buffers are subject to the following:

1. Land that is located wholly within a wetland and/or its buffer may not be subdivided; and

2. Land that is located partially within a wetland and/or its buffer may be subdivided; provided, that an accessible and contiguous portion of each new lot is:

   a. Located outside of the wetland and its buffer; and

   b. Meets the minimum lot size requirements of SMC 20.50.020.

20.240.330 Wetlands – Required buffer areas.

A. **Buffer Requirements.** The standard buffer widths in Table 20.240.330(A)(1) have been established in accordance with the best available science. The buffer widths shall be determined based on the category of wetland and the habitat score as assigned by a qualified wetland professional using the Washington State Wetland Rating System for Western Washington.

1. The use of the standard buffer widths requires the implementation of the mitigation measures in Table 20.240.330(A)(2), where applicable to the development type, to minimize the impacts of the adjacent land uses.

2. If an applicant chooses not to apply the appropriate mitigation measures in Table 20.240.330(A)(2), then a 33 percent increase in the width of all buffers is required. For example, a 75-foot buffer with the mitigation measures would be a 100-foot buffer without them.

3. The standard buffer widths assume that the buffer is a relatively intact native plant community in the buffer zone adequate to protect the wetland functions and values at the time of the proposed activity. If the existing buffer is bare ground, sparsely vegetated, or vegetated with nonnative or invasive species that do not perform needed functions, then the applicant shall either develop and implement a wetland buffer restoration or enhancement plan to maintain the standard width to create the appropriate plant community or the buffer shall be widened to ensure that adequate functions of the buffer are provided.

Table 20.240.330(A)(1) Wetland Buffer Requirements

Wetland Category	**Buffer Width According to Habitat Score**			
	Habitat Score of 3 – 4	**Habitat Score of 5**	**Habitat Score of 6 – 7**	**Habitat Score of 8 – 9**
Category I: Based on total score or Forested	75 ft	105 ft	165 ft	225 ft
Category I: Estuarine	150 ft (no change based on habitat scores)			
Category II: Based on total score	75 ft	105 ft	165 ft	225 ft

Table 20.240.330(A)(1) Wetland Buffer Requirements

Wetland Category	Buffer Width According to Habitat Score			
	Habitat Score of 3 – 4	Habitat Score of 5	Habitat Score of 6 – 7	Habitat Score of 8 – 9
Category III (all)	60 ft	105 ft	165 ft	225 ft
Category IV (all)	40 ft (no change based on habitat scores)			

Table 20.240.330(A)(2) Required Measures to Minimize Impacts to Wetlands (Measures are required, where applicable to a specific proposal)

Disturbance	Activities and Uses That Cause Disturbances	Required Measures to Minimize Impacts
Lights	• Parking lots • Warehouses • Manufacturing • Residential	• Direct lights away from wetland.
Noise	• Manufacturing • Residential	• Locate activity that generates noise away from wetland. • If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source. • For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10 ft heavily vegetated buffer strip immediately adjacent to the outer wetland buffer.
Toxic runoff*	• Parking lots • Roads • Manufacturing • Residential areas	• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered. • Establish covenants limiting use of pesticides and fertilizers within 150 ft of wetland. • Apply integrated pest management.

Table 20.240.330(A)(2) Required Measures to Minimize Impacts to Wetlands
(Measures are required, where applicable to a specific proposal)

Disturbance	Activities and Uses That Cause Disturbances	Required Measures to Minimize Impacts
	• Application of agricultural pesticides • Landscaping	
Stormwater runoff	• Parking lots • Roads • Manufacturing • Residential areas • Commercial • Landscaping	• Retrofit stormwater detention and treatment for roads and existing adjacent development. • Prevent channelized flow from lawns that directly enters the buffer. • Use low intensity development techniques (per PSAT publication on LID techniques).
Change in water regime	• Impermeable surfaces • Lawns • Tilling	• Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns.
Pets and human disturbance	• Residential areas	• Use privacy fencing OR plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion. • Place wetland and its buffer in a separate tract or protect with a conservation easement.
Dust	• Tilled fields	• Use best management practices to control dust.
Disruption of corridors or connections		• Maintain connections to off-site areas that are undisturbed. • Restore corridors.
* These examples are not necessarily adequate for minimizing toxic runoff if threatened or endangered species are present at the site. Additional mitigation measures may be required		

Table 20.240.330(A)(2) Required Measures to Minimize Impacts to Wetlands
(Measures are required, where applicable to a specific proposal)

Disturbance	Activities and Uses That Cause Disturbances	Required Measures to Minimize Impacts
based on recommendation of a qualified professional, third party review, or State agency recommendations.		

4. **Increased Wetland Buffer Area Width.** Buffer widths shall be increased, on a case-by-case basis as determined by the Director, when a larger buffer is necessary to protect the shoreline ecological functions provided by the wetland's functions and values. This determination shall be supported by a critical area report, prepared by a qualified professional at the applicant's expense, showing that it is reasonably related to protection of the functions and values of the wetland and the shoreline. The critical area report shall include, but not be limited to, the following criteria:

a. The wetland is used by a plant or animal species listed by the Federal government or the State as endangered, threatened, candidate, sensitive, monitored, or documented priority species or habitats, or the wetland is essential or outstanding habitat for those species or has unusual nesting or resting sites such as heron rookeries or raptor nesting trees; or

b. The adjacent land has slopes greater than 15 percent and is susceptible to severe erosion, and erosion-control measures will not effectively prevent adverse wetland impacts; or

c. The adjacent land has minimal vegetative cover. In lieu of increasing the buffer width where exiting buffer vegetation is inadequate to protect the wetland functions and values, development and implementation of a wetland buffer restoration/enhancement plan in accordance with SMC 20.240.350 may be substituted.

5. Buffer averaging to improve wetland functions and values may be permitted when all of the following conditions are met:

a. The wetland has significant differences in characteristics that affect its habitat functions, such as a wetland with a forested component adjacent to a degraded emergent component or is a “dual-rated” wetland with a Category I area adjacent to a lower rated area;

b. The buffer is increased adjacent to the higher functioning area of habitat or more sensitive portion of the wetland and decreased adjacent to the lower functioning or less sensitive portion as demonstrated by a critical areas report from a qualified wetland professional;

c. The total area of the buffer after averaging is equal to the area required without averaging; and

d. The buffer at its narrowest point is never less than either three-fourths of the required width or 75 feet for Category I and II, 50 feet for Category III, and 25 feet for Category IV, whichever is greater.

6. Buffer averaging, through a shoreline variance consistent with 20.220.040, may be permitted when all of the following are met:

a. There are no feasible alternatives to the site design that could be accomplished without buffer averaging;

b. The averaged buffer will not result in degradation of the wetland’s functions and values as demonstrated by a critical areas report from a qualified wetland professional;

c. The total buffer area after averaging is equal to the area required without averaging; and

d. The buffer at its narrowest point is never less than either three-fourths of the required width or 75 feet for Category I and II, 50 feet for Category III, and 25 feet for Category IV, whichever is greater.

B. **Measurement of Wetland Buffers.** All buffers shall be measured perpendicular from the wetland boundary as surveyed in the field. The buffer for a wetland created, restored, or enhanced as compensation for approved wetland alterations shall be the same as the buffer required for the category of the created, restored, or enhanced wetland.

C. **Buffers on Mitigation Sites.** All mitigation sites shall have buffers consistent with the buffer requirements of this chapter. Buffers shall be based on the expected or target category of the proposed wetland mitigation site.

D. **Buffer Maintenance.** Except as otherwise specified or allowed in accordance with this chapter, wetland buffers shall be retained in an undisturbed or enhanced condition. In the case of compensatory mitigation sites, removal of invasive nonnative weeds is required for the duration of the required monitoring period.

E. **Impacts to Buffers.** Requirements for the compensation for impacts to buffers are outlined in SMC 20.240.350.

F. **Overlapping Critical Area Buffers.** If buffers for two contiguous critical areas overlap (such as buffers for a stream and a wetland), the wider buffer applies.

G. **Allowed Wetland Buffer Uses.** The following uses may be allowed within a wetland buffer in accordance with the review procedures of this chapter; provided such uses are not prohibited by any other applicable law and such uses are conducted in a manner so as to minimize impacts to the buffer and adjacent wetland:

1. **Conservation and Restoration Activities.** Conservation or restoration activities aimed at protecting the soil, water, vegetation, or wildlife.

2. **Passive Recreation.** Passive recreation facilities designed and in accordance with an approved critical area report, including:

a. Walkways and trails; provided, that those pathways are limited to minor crossings having no adverse impact on water quality. Pathways should be generally parallel to the perimeter of the wetland, located only in the outer 25 percent of the wetland buffer area, and located to avoid removal of significant trees. Pathways should be limited to pervious surfaces no more than five feet in width for pedestrian use only. Raised boardwalks utilizing nontreated pilings may be acceptable;

b. Wildlife viewing structures.

3. Educational and scientific research activities.

4. Normal and routine maintenance and repair of any existing public or private facilities within an existing right-of-way, provided, that the maintenance or repair does not increase the footprint or use of the facility or right-of-way.

5. The harvesting of wild crops in a manner that is not injurious to natural reproduction of such crops, and provided the harvesting does not require tilling of soil, planting of crops, chemical applications, or alteration of the wetland by changing existing topography, water conditions, or water sources.

6. Drilling for utilities/utility corridors under a buffer, with entrance/exit portals located completely outside of the wetland buffer boundary; provided, that the drilling does not interrupt the ground water connection to the wetland or percolation of surface water down through the soil column. Specific studies by a hydrologist are necessary to determine whether the ground water connection to the wetland or percolation of surface water down through the soil column is disturbed.

7. Enhancement of a wetland through the select removal of nonnative invasive plant species. Removal of invasive plant species shall be restricted to hand labor and handheld equipment unless permits from the appropriate regulatory agencies have been obtained for approved biological or chemical treatments. Not more than 1,500 square feet of area may be cleared, as calculated cumulatively over one year, on private property without a permit. All removed plant material shall be taken away from the site and disposed of appropriately. Plants that appear on the Washington State Noxious Weed Control Board list of noxious weeds or the King County Noxious Weed List shall be handled and disposed of according to a noxious weed control plan appropriate to that species. Revegetation with appropriate native species at natural densities is allowed in conjunction with removal of invasive plant species.

8. **Stormwater Management Facilities.** Stormwater management facilities are limited to stormwater dispersion outfalls, bioswales, and other low-impact facilities consistent with the adopted stormwater manual. Stormwater management facilities are not allowed in buffers of Category I or II wetlands. Facilities may be allowed within the outer 25 percent of the buffer of Category III or IV wetlands only; provided, that:

a. No other location is feasible; and

b. The location of such facilities will not degrade the functions or values of the wetland.

9. **Nonconforming Uses or Structures.** Repair and maintenance of nonconforming uses or structures, where legally established within the buffer, provided such uses or structures do not increase the degree of nonconformity, consistent with SMC 20.220.150.

10. **Development Proposals within Physically Separated and Functionally Isolated Wetland Buffers.** Consistent with the definition of "buffers" (SMC 20.20.012), areas that are functionally isolated and physically separated from wetland due to existing, legally established roadways, paved trails eight feet or more in width, or other legally established structures or paved areas eight feet or more in width that occur between the area in question and the wetland shall be considered physically isolated and functionally separated wetland buffers. Once determined by the Director, based on a submitted critical area report to be a physically separated and functionally isolated wetland buffer, development proposals shall be allowed in these areas.

H. **Signs and Fencing of Wetlands and Buffers.**

1. **Temporary Markers.** The outer perimeter of the wetland buffer and the clearing limits identified by an approved permit or authorization shall be marked in the field with temporary "clearing limits" fencing in such a way as to ensure that no unauthorized intrusion will occur. The marking is subject to inspection by the Director prior to the commencement of permitted activities during the preconstruction meeting required under SMC 20.50.330(E). This temporary marking and fencing shall be maintained throughout construction and shall not be removed until permanent signs, if required, are in place.

2. **Permanent Signs.** As a condition of any permit or authorization issued pursuant to this chapter, the Director may require the applicant to install permanent signs along the boundary of a wetland or buffer, when recommended in a critical area report or otherwise required by the provisions of this chapter.

a. Permanent signs shall be made of an enamel-coated metal face and attached to a metal post or another nontreated material of equal durability. Signs shall be posted at an interval of one per lot or every 50 feet, whichever is less, and shall be maintained by the property owner in perpetuity. The signs shall be worded consistent with the text specified in SMC 20.240.110 or with alternative language approved by the Director.

b. The provisions of subsection (H)(2)(a) of this section may be modified as necessary to assure protection of sensitive features.

3. **Fencing.** Fencing installed as part of a proposed activity or as required in this subsection shall be designed so as to not interfere with species migration, including fish runs, and shall be constructed in a manner that minimizes impacts to the wetland and associated habitat. Permanent fencing shall be required at the outer edge of the critical area buffer under the following circumstances; provided, that the Director may waive this requirement:

a. As part of any development proposal for subdivisions, short plats, multifamily, mixed use, and commercial development where the Director determines that such fencing is necessary to protect the functions of the critical area; provided, that breaks in permanent fencing may be allowed for access to permitted buffer uses (subsection G of this section);

b. As part of development proposals for parks where the adjacent proposed use is active recreation and the Director determines that such fencing is necessary to protect the functions of the critical area;

c. When buffer averaging is part of a development proposal; or

d. At the Director's discretion to protect the values and functions of a critical area as demonstrated in a critical area report. If found to be necessary, the Director shall condition any permit or authorization issued pursuant to this chapter to require the applicant to install a permanent fence at the edge of the habitat conservation area or buffer, when fencing will prevent future impacts to the habitat conservation area;

e. The applicant shall be required to install a permanent fence around the wetland buffer when domestic grazing animals, only as allowed under SMC 20.40.240, are present or may be introduced on site.

20.240.340 Wetlands – Critical area report requirements.

A. **Report Required.** If the Director determines that the site of a proposed development includes, is likely to include, or is adjacent to, a wetland, a wetland critical area report shall be required. Critical area report requirements for wetland areas are generally met through submission to the Director of one or more wetland critical area reports. In addition to the general

critical area report requirements of SMC 20.240.080, critical area reports for wetlands shall meet the requirements of this section. Critical area reports for two or more types of critical areas shall meet the report requirements for each relevant type of critical area.

B. **Preparation by a Qualified Professional.** Critical area reports for wetlands shall be prepared and signed by a qualified professional who is a certified wetland scientist or a noncertified wetland scientist with the minimum required experience, per SMC 20.20.042, in the field of wetland science and with experience preparing wetland delineation, impact assessments, and mitigation plans.

C. **Third Party Review Required.** Critical areas studies and reports on wetland areas shall be subject to third party review consistent with SMC 20.240.080(C) and in any of the additional following circumstances:

1. Compensatory mitigation is required for impacts to Category I, II, or III wetlands and or buffers; or

2. Compensatory mitigation is required for impacts to Category IV wetlands.

D. **Minimum Report Contents for Wetlands.** The written critical area report(s) and accompanying plan sheet(s) shall contain the following information, at a minimum:

1. The minimum report contents required per SMC 20.240.080(E);

2. Documentation of any fieldwork performed on the site, including field data sheets for delineations, rating system forms, baseline hydrologic data, site photos, etc.;

3. A description of the methodologies used to conduct the wetland delineations, ratings, or impact analyses including references;

4. **Site Plans.** A copy of the site plan sheet(s) for the project shall be included with the written report and shall include, at a minimum:

a. Maps (to scale) depicting delineated and surveyed wetland(s) and required buffers on site, including buffers for off-site critical areas that extend onto the project site; the development proposal; other critical areas; clearing and grading limits; areas of proposed impacts to wetlands and/or buffers (include square footage estimates); and

b. A depiction of the proposed stormwater management facilities and outlets (to scale) for the development, including estimated areas of intrusion into the buffers of any critical areas. The written report shall contain a discussion of the potential impacts to the wetland(s) associated with anticipated hydroperiod alterations from the project;

5. For each wetland identified on site and off site within 300 feet of the project site provide: the wetland rating, including a description of and score for each function, per wetland ratings (SMC 20.240.320(B)); required buffers (SMC 20.240.330); hydrogeomorphic classification; wetland acreage based on a professional survey from the field delineation (acreages for on-site portion and entire wetland area including off-site portions); Cowardin classification of vegetation communities; habitat elements; soil conditions based on site assessment and/or soil survey information; and to the extent possible, hydrologic information such as location and condition of inlet/outlets (if inlets/outlets can be legally accessed), estimated water depths within the wetland, and estimated hydroperiod patterns based on visual cues (e.g., algal mats, drift lines, flood debris, etc.). Provide acreage estimates, classifications, and ratings based on entire wetland complexes, not only the portion present on the proposed project site;

6. A description of the proposed actions, including an estimation of acreages of impacts to wetlands and buffers based on the field delineation and survey and an analysis of site development alternatives, including a no-development alternative;

7. An assessment of the probable cumulative impacts to the wetlands and buffers resulting from the proposed development;

8. A description of reasonable efforts made to apply mitigation sequencing pursuant to SMC 20.240.053(A) to avoid, minimize, and mitigate impacts to critical areas and a discussion of measures, including avoidance, minimization, and compensation, proposed to preserve existing wetlands and restore any wetlands that were degraded prior to the current proposed land-use activity;

9. A conservation strategy for habitat and native vegetation that addresses methods to protect and enhance on-site habitat and wetland functions; and

10. An evaluation of the functions of the wetland and adjacent buffer. Include reference for the method used and data sheets.

E. **Additional Information.** When appropriate due to the proposed impacts or the project area conditions, the Director may also require the critical area report to include:

1. Where impacts are proposed, mitigation plans consistent with the requirements of SMC 20.240.082 and the wetland mitigation performance standards and requirements of SMC 20.240.350;

2. A request for consultation with the Washington State Department of Fish and Wildlife (DFW), Washington State Department of Ecology (Ecology), local Native American Indian tribes, and/or other appropriate agency;

3. Copies of the joint aquatic resource permit application (JARPA) and related approvals, such as a hydraulic project approval (HPA) from the DFW, when applicable to the project; and

4. Detailed surface and subsurface hydrologic features both on and adjacent to the site.

20.240.350 Wetlands – Compensatory mitigation performance standards and requirements.

A. **Requirements for Compensatory Mitigation.**

1. Compensatory mitigation for alterations to wetlands shall be used only for impacts that cannot be avoided or minimized and shall achieve equivalent or greater shoreline ecological and biologic functions. Compensatory mitigation plans shall be consistent with Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1), (Ecology Publication No. 06-06-011b, March 2006, or as revised).

2. Mitigation ratios shall be consistent with subsection E of this section.

3. Mitigation requirements may also be determined using the credit/debit tool described in "Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington: Operational Draft" (Ecology Publication No. 10-06-011, February 2011, or as revised) consistent with subsection E of this section.

B. **Compensating for Lost or Impacted Functions.** Compensatory mitigation shall address the shoreline ecological functions and the wetland or wetland buffer functions and values affected by the proposed project, with an intention to achieve functional equivalency or

improvement of functions and values. The goal shall be for the compensatory mitigation to provide similar shoreline ecological functions and wetland functions and values as those lost, except when either:

1. The lost wetland provides minimal functions and values, and the proposed compensatory mitigation action(s) will provide equal or greater functions and values or will provide functions and values shown to be limiting within a watershed through a formal Washington State watershed assessment plan or protocol; or

2. Out-of-kind replacement of wetland type or functions and values will best meet watershed goals formally identified by the City, such as replacement of historically diminished wetland types.

C. **Preference of Mitigation Actions.** Methods to achieve compensation for wetland functions and values shall be approached in the following order of preference:

1. **Restoration.** Restoration of wetlands.

2. **Creation.** Creation (establishment) of wetlands on disturbed upland sites, such as those with vegetative cover consisting primarily of nonnative species. This should be attempted only when there is an adequate source of water and it can be shown that the surface and subsurface hydrologic regime is conducive to the wetland community that is anticipated in the design.

3. **Enhancement.** Enhancement of significantly degraded wetlands in combination with restoration or creation. Enhancement alone will result in a loss of wetland acreage and is less effective at replacing the functions and values lost. Enhancement should be part of a mitigation package that includes replacing the impacted area and meeting appropriate ratio requirements.

4. **Preservation.** Preservation of high-quality, at-risk wetlands as compensation is generally acceptable when done in combination with restoration, creation, or enhancement; provided, that a minimum of 1:1 acreage replacement is provided by reestablishment or creation. Preservation of high-quality, at-risk wetlands and habitat may be considered as the sole means of compensation for wetland impacts when the following criteria are met:

a. Wetland impacts will not have a significant adverse impact on habitat for listed fish, or other ESA-listed species;

b. There is no net loss of habitat functions within the watershed or basin;

c. Mitigation ratios for preservation as the sole means of mitigation shall generally start at 20:1. Specific ratios should depend upon the significance of the preservation project and the quality of the wetland resources lost;

d. The impact area is small (generally less than one-half acre) and/or impacts are occurring to a low-functioning system (Category III or IV wetland); and

e. All preservation sites shall include buffer areas adequate to protect the habitat and its functions from encroachment and degradation.

D. **Type and Location of Compensatory Mitigation.** Unless it is demonstrated that a higher level of ecological functioning would result from an alternative approach, compensatory mitigation for ecological functions shall be either in kind and on site, or in kind and within the same stream reach, sub-basin, or drift cell (if estuarine wetlands are impacted). Compensatory mitigation actions shall be conducted within the same sub-drainage basin and on the site of the alteration, except when all of the following apply:

1. There are no reasonable opportunities on site or within the sub-drainage basin (e.g., on-site options would require elimination of high-functioning upland habitat), or opportunities on site or within the sub-drainage basin do not have a high likelihood of success based on a determination of the capacity of the site to compensate for the impacts. Considerations should include:

a. Anticipated replacement ratios for wetland mitigation;

b. Buffer conditions and proposed widths;

c. Available water to maintain anticipated hydrogeomorphic classes of wetlands when restored; and

d. Proposed flood storage capacity, and potential to mitigate riparian fish and wildlife impacts (such as connectivity);

2. Off-site mitigation has a greater likelihood of providing equal or improved wetland functions than the impacted wetland;

3. Off-site locations shall be in the same sub-drainage basin, unless watershed goals for water quality, flood storage or conveyance, habitat, or other wetland functions have been established by the City and strongly justify location of mitigation at another site; and

4. The design for the compensatory mitigation project needs to be appropriate for its location (i.e., position in the landscape). Therefore, compensatory mitigation should not result in the creation, restoration, or enhancement of an atypical wetland. An atypical wetland refers to a compensation wetland (e.g., created or enhanced) that does not match the type of existing wetland that would be found in the geomorphic setting of the site (i.e., the water source(s) and hydroperiod proposed for the mitigation site are not typical for the geomorphic setting). Likewise, it should not provide exaggerated morphology or require a berm or other engineered structures to hold back water. For example, excavating a permanently inundated pond in an existing, seasonally saturated or inundated wetland is one example of an enhancement project that could result in an atypical wetland. Another example would be excavating depressions in an existing wetland on a slope, which would require the construction of berms to hold the water.

E. **Wetland Mitigation Ratios[1].**

Table 20.240.350(G). Wetland mitigation ratios apply when impacts to wetlands cannot be avoided or are otherwise allowed consistent with the provisions of this chapter.

Category and Type of Wetland[2]	Creation or Reestablishment (Area – in square feet)	Rehabilitation (Area – in square feet)	Enhancement (Area – in square feet)	Preservation (Area – in square feet)
Category I: Based on total score for functions	4:1	8:1	16:1	20:1
Category I: Mature forested	6:1	12:1	24:1	24:1

Table 20.240.350(G). Wetland mitigation ratios apply when impacts to wetlands cannot be avoided or are otherwise allowed consistent with the provisions of this chapter.

Category and Type of Wetland[2]	Creation or Reestablishment (Area – in square feet)	Rehabilitation (Area – in square feet)	Enhancement (Area – in square feet)	Preservation (Area – in square feet)
Category I: Estuarine	Case-by-case	6:1	Case-by-case	Case-by-case
Category II: Based on total score for functions	3:1	6:1	12:1	20:1
Category III (all)	2:1	4:1	8:1	15:1
Category IV (all)	1.5:1	3:1	6:1	10:1

[1] Ratios for rehabilitation and enhancement may be reduced when combined with 1:1 replacement through creation or reestablishment. See Table 1a or 1b, Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance – Version 1 (Ecology Publication No. 06-06-011a, March 2006, or as revised).

[2] Category and rating of wetland as determined consistent with SMC 20.240.320(B).

F. **Buffer Mitigation Ratios.** Impacts to buffers shall be mitigated at a 1:1 ratio. Compensatory buffer mitigation shall replace those buffer functions lost from development.

G. **Mitigation Performance Standards.** The performance standards in this section shall be incorporated into mitigation plans submitted to the City for impacts to wetlands. The following performance standards shall apply to any mitigations proposed within Category I, II, III and IV wetlands and their buffers. Modifications to these performance standards consistent with the guidance in Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1) (Ecology Publication No. 06-06-011b, March 2006, or as revised) may be considered for approval by the Director as alternatives to the following standards:

1. Plants indigenous to the region (not introduced or foreign species) shall be used.

2. Plant selection shall be consistent with the existing or projected hydrologic regime, including base water levels and stormwater event fluctuations.

3. Plants should be commercially available or available from local sources.

4. Plant species high in food and cover value for fish and wildlife shall be used.

5. Mostly perennial species should be planted.

6. Committing significant areas of the site to species that have questionable potential for successful establishment shall be avoided.

7. Plant selection shall be approved by a qualified professional.

8. The following standards shall apply to wetland design and construction:

    a. Water depth shall not exceed six and one-half feet (two meters).

    b. The grade or slope that water flows through the wetland shall not exceed six percent.

    c. Slopes within the wetland basin and the buffer zone shall not be steeper than 3:1 (horizontal to vertical).

    d. The wetland (excluding the buffer area) should not contain more than 60 percent open water as measured at the seasonal high water mark.

9. Substrate should consist of a minimum of one foot, in depth, of clean (uncontaminated with chemicals or solid/hazardous wastes) inorganic/organic materials.

10. Planting densities and placement of plants should be determined by a qualified professional and shown on the design plans.

11. The planting plan shall be approved by the City.

12. Stockpiling soil and construction materials should be confined to upland areas and contract specifications should limit stockpiling of earthen materials to durations in

accordance with City clearing and grading standards, unless otherwise approved by the City.

13. Planting instructions shall be submitted which describe placement, diversity, and spacing of seeds, tubers, bulbs, rhizomes, sprigs, plugs, and transplanted stock.

14. Controlled release fertilizer shall be applied (if required) at the time of planting and afterward only as plant conditions warrant as determined during the monitoring process.

15. An irrigation system shall be installed, if necessary, for the initial establishment period.

16. All construction specifications and methods shall be approved by a qualified professional and the City.

17. Construction management shall be provided by a qualified professional. Ongoing work on site shall be inspected by the City.

H. **Compensatory Mitigation Plan.** When a project involves wetland and/or buffer impacts, a compensatory mitigation plan shall be included as part of the required critical area report. Compensatory wetland mitigation plans shall meet the minimum requirements SMC 20.240.082 and demonstrate compliance with SMC 20.240.053. Full guidance can be found in Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1) (Ecology Publication No. 06-06-011b, March 2006, or as revised). The mitigation plan shall meet the following additional standards:

1. Description of the existing wetland and buffer areas proposed to be impacted. Include acreage (or square footage), water regime, vegetation, soils, landscape position, surrounding land uses, and functions. Also describe impacts in terms of acreage by Cowardin classification, hydrogeomorphic classification, and wetland rating, based on wetland ratings (SMC 20.240.320(B));

2. Description of the compensatory mitigation site, including location and rationale for selection. Include an assessment of existing conditions: acreage (or square footage) of wetlands and uplands, water regime, sources of water, vegetation, soils, landscape position, surrounding land uses, and functions. Estimate future conditions in this location if the compensation actions are not undertaken (i.e., how would this site progress through natural succession);

3. A description of the proposed actions for compensation of wetland and upland areas affected by the project. Include overall goals of the proposed mitigation, including a description of the targeted functions, hydrogeomorphic classification, and categories of wetlands;

4. A description of the proposed mitigation construction activities, construction/installation notes, and timing of activities;

5. A discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs (for remaining wetlands and compensatory mitigation wetlands);

6. Proof of establishment of notice on title for the wetlands and buffers on the project site, including the compensatory mitigation areas; and

7. The scaled plan sheets for the compensatory mitigation shall contain, at a minimum:

a. Surveyed edges of the existing wetland and buffers, proposed areas of wetland and/or buffer impacts, location of proposed wetland and/or buffer compensation actions;

b. Existing topography, ground-proofed, at two-foot contour intervals in the zone of the proposed compensation actions if any grading activity is proposed to create the compensation area(s). Also existing cross-sections of on-site wetland areas that are proposed to be impacted and cross-section(s) (estimated one-foot intervals) for the proposed areas of wetland or buffer compensation;

c. Surface and subsurface hydrologic conditions, including an analysis of existing and proposed hydrologic regimes for enhanced, created, or restored compensatory mitigation areas. Also, illustrations of how data for existing hydrologic conditions were used to determine the estimates of future hydrologic conditions;

d. Conditions expected from the proposed actions on site, including future hydrogeomorphic types, vegetation community types by dominant species (wetland and upland), and future water regimes;

e. Required wetland buffers for existing wetlands and proposed compensation areas. Also, identify any zones where buffers are proposed to be reduced or enlarged outside of the standards identified in this chapter;

f. A plant schedule for the compensation area, including all species by proposed community type and water regime, size and type of plant material to be installed, spacing of plants, typical clustering patterns, typical plant installation details and notes, total number of each species by community type, timing of installation; and

g. Performance standards (measurable standards reflective of years post-installation) for upland and wetland communities, monitoring plan, contingency plan, and maintenance schedule, and actions. Standards for success shall be established based on the performance standards identified and the functions and values being mitigated based on the guidance in Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1) (Ecology Publication No. 06-06-011b, March 2006, or as revised).

Subchapter 5.

Flood Hazard Areas

20.240.360 Flood hazard – Description and purpose.

A. A flood hazard area consists of the special flood hazard areas and protected areas as defined in Chapter 13.12 SMC Floodplain Management, which comprise the regulatory floodplain.

B. It is the purpose of these regulations to ensure that the City of Shoreline meets the requirements of the National Flood Insurance Program and maintains the City as an eligible community for Federal flood insurance benefits.

20.240.370 Flood hazard – Designation and classification.

Flood hazard areas shall be designated and classified pursuant to the requirements of the floodplain management regulations, Chapter 13.12 SMC, which include, at a minimum, all lands identified on the 100-year floodplain designations of the current Federal Emergency

Management Agency (FEMA) flood insurance rate map (FIRM) for King County as identified in SMC 13.12.300.

20.240.380 Flood hazard – Development limitations.

All development within designated flood hazard areas shall comply with Chapter 13.12 SMC, Floodplain Management, as now or hereafter amended, and is not further subject to the regulations of this chapter.

Subchapter 6.

Aquifer Recharge Areas

20.240.420 Aquifer recharge – Description and purpose.

A. Aquifer recharge areas consist of areas that provide a source of potable water and contribute to stream discharge during periods of low flow, as defined in Chapter 20.20 SMC.

B. The primary purpose of aquifer recharge area regulations is to protect aquifer recharge areas by providing for regulation of land use activities that pose a risk of potential aquifer contamination and to minimize impacts through the application of strict performance standards.

20.240.430 Aquifer recharge – Designation and classification.

A. Aquifer recharge areas shall be designated and classified based on the soil and ground water conditions and risks to surface water during periods of low hydrology. Classification depends on the combined effects of hydrogeological susceptibility to contamination and contaminant loading potential, and includes upland areas underlain by soils consisting largely of silt, clay or glacial till, upland areas underlain by soils consisting largely of sand and gravel, and wellhead protection areas and areas underlain by soils consisting largely of sand and gravel in which there is a predominantly downward or lateral component to ground water flow.

B. At the time of adoption of the amendments to the critical areas of the City's SMP, Ordinance 856, there were no identified critical aquifer recharge areas within the City of Shoreline.

20.80.440 Aquifer recharge – Alteration.

Subject to the required permits, the following land uses and activities shall require implementation of best management practices (BMPs) as established by the Department of Ecology:

A. Land uses and activities that involve the use, storage, transport or disposal of significant quantities of chemicals, substances or materials that are toxic, dangerous or hazardous, as those terms are defined by State and Federal regulations.

B. On-site community sewage disposal systems.

C. Underground storage of chemicals.

D. Petroleum pipelines.

E. Solid waste landfills.

F. Stormwater management, including infiltration, and ground water recharge.

20.80.450 Aquifer recharge – Performance standards and requirements.

Any uses or activities that seek to be located in an aquifer recharge area, as defined within this subchapter, that involve the use, storage, transport or disposal of significant quantities of chemicals, substances, or materials that are toxic, dangerous or hazardous, as those terms are defined by State and Federal regulations, shall comply with the following additional standards:

A. Underground storage of chemicals, substances or materials that are toxic, hazardous or dangerous is discouraged.

B. Any chemicals, substances or materials that are toxic, hazardous or dangerous shall be segregated and stored in receptacles or containers that meet State and Federal standards.

C. Storage containers shall be located in a designated, secured area that is paved and able to contain leaks and spills, and shall be surrounded by a containment dike.

D. Secondary containment devices shall be constructed around storage areas to retard the spread of any spills and a monitoring system should be implemented.

E. A written operations plan shall be developed, including procedures for loading/unloading liquids and for training of employees in proper materials handling.

F. An emergency response/spill clean-up plan shall be prepared and employees properly trained to react to accidental spills.

G. Any aboveground storage tanks shall be located within a diked containment area on an impervious surface. The tanks shall include overfill protection systems and positive controls on outlets to prevent uncontrolled discharges.

H. Development should be clustered and impervious surfaces limited where possible.

I. No waste liquids or chemicals of any kind shall be discharged to storm sewers.

J. All development shall implement best management practices (BMPs) for water quality, as approved by the City, including the standards contained within the adopted stormwater manual, such as biofiltration swales and use of oil-water separators, and BMPs appropriate to the particular use proposed.

Attachment C - Chapter 13.12 Floodplain Management

13.12.105 Definitions.

Unless specifically defined below, terms or phrases used in this chapter shall be interpreted so as to give them the meaning they have in common usage and to give this chapter its most reasonable application. The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

“Adversely affect” or “adverse effect” means an effect that is a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effects are not discountable, insignificant or beneficial. A discountable effect is extremely unlikely to occur. An insignificant effect relates to the size of the impact and should never reach the scale where a take occurs. Based on best judgment, a person would not: (A) be able to meaningfully measure, detect, or evaluate an insignificant effect; or (B) expect a discountable effect to occur.

“Appurtenant structure” means a structure which is on the same parcel of property as the principal structure to be insured and the use of which is incidental to the use of the principal structure.

“Base flood” means the flood having a one percent chance of being equaled or exceeded in any given year (also referred to as the “100-year flood”). The area subject to the base flood is the special flood hazard area designated on flood insurance rate maps as Zone “A” or “V” including AE, AO, AH, A1-99 and VE.

“Base flood elevation” means the elevation of the base flood above the datum of the effective flood insurance rate map (FIRM).

“Basement” means any area of the structure having its floor subgrade (below ground level) on all sides.

“Beneficial effect” means a contemporaneous positive effect without any adverse effect. In the event that the overall effect of the proposed action is beneficial, but is also likely to cause some adverse effect, then the proposed action is considered to result in an adverse effect.

“Channel migration zone” means the area within the lateral extent of likely stream channel movement due to a destabilization and erosion, rapid stream incision, aggradations, avulsions, and shifts in location of stream channels.

“Critical facility” means a facility necessary to protect the public health, safety, and welfare during a flood. Critical facilities include, but are not limited to, schools, nursing homes, hospitals, police, fire and emergency operations installations, water and wastewater treatment plants, electric power stations, and installations which produce, use, or store hazardous materials or hazardous waste (other than consumer products containing hazardous substances or hazardous waste intended for household use).

“Development” means any manmade change to improved or unimproved real estate in the regulatory floodplain, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, storage of equipment or materials, subdivision of land, removal of more than five percent of the native vegetation on the property, or alteration of natural site characteristics.

"Director" means the ~~public works~~Planning and Community Development ~~d~~Director or designee.

"Dry floodproofing" means any combination of structural and nonstructural measures that prevent floodwaters from entering a structure.

"Elevation certificate" means the most current version of the FEMA National Flood Insurance Program form that documents the elevation of a structure within a special flood hazard area relative to the ground level so as to ensure compliance with this chapter, to determine the flood insurance premium rate, and/or to support a map amendment or revision.

"ESA" means the Endangered Species Act.

"Federal Emergency Management Agency (FEMA)" means the agency responsible for administering the National Flood Insurance Program.

"FEMA" means Federal Emergency Management Agency.

"FIRM" means flood insurance rate map.

"Fish and wildlife habitat conservation area" means lands needed to maintain species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created. These areas are designated in SMC 20.80.260 through 20.80.300.

"Flood" or "flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from:

A. The overflow of inland or tidal waters; and/or

B. The unusual and rapid accumulation of runoff of surface waters from any source.

"Flood insurance rate map (FIRM)" means the official map on which the Federal Emergency Management Agency has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

"Flood insurance study" means the official report provided by the Federal Emergency Management Agency that includes flood profiles, the flood insurance rate map, and the water surface elevation of the base flood.

"Flood protection elevation (FPE)" means the elevation above the datum of the effective FIRM to which new and substantially improved structures must be protected from flood damage.

"Floodway" means the channel of a stream or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot at any point.

"Functionally dependent use" means a use that must be located or carried out close to water, for example docking or port facilities necessary for the unloading of cargo or passengers, or shipbuilding and ship repair.

"Historic structure" means a structure that:

A. Is listed on the National Register of Historic Places, the Washington Heritage Register, or the Washington Heritage Barn Register; or

B. Has been certified to contribute to the historical significance of a registered historic district.

“Hyporheic zone” means a saturated layer of rock or sediment beneath and/or adjacent to a stream channel that contains some proportion of channel water or that has been altered by channel water infiltration.

“Impervious surface” means a hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled macadam or other surfaces which similarly impede the natural infiltration of stormwater.

“Lowest floor” means the lowest floor of the lowest enclosed area (including basement or crawl space) of a structure. An unfinished or flood-resistant enclosure, used solely for parking of vehicles, building access, or storage in an area other than a basement area, is not considered a structure’s lowest floor; provided, that such enclosure is compliant with SMC 13.12.500(B)(6), so that there are adequate openings to allow floodwaters into the area.

“Manufactured home” means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term “manufactured home” does not include a “recreational vehicle.”

“Manufactured home park or subdivision” means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

“Market value” means either the true and fair value of the property as established by the county assessor or by a Washington State certified or licensed appraiser.

“Native vegetation” means plant species that are indigenous to the community’s area and that reasonably could be expected to naturally occur on the site.

“Natural floodplain functions” means the contribution that a floodplain makes to support habitat, including but not limited to providing flood storage and conveyance, reducing flood velocities, reducing sedimentation, filtering nutrients and impurities from runoff, processing organic wastes, moderating temperature fluctuations, and providing breeding and feeding grounds, shelter, and refugia for aquatic or riparian species.

“New construction” means structures for which the “start of construction” commenced on or after the effective date of this chapter.

“NMFS” means National Marine Fisheries Service.

“Protected area” means the lands that lie within the boundaries of the floodway, the riparian habitat zone, and the channel migration area. Because of the impact that development can have on flood heights and velocities and habitat, special rules apply in the protected area.

“Recreational vehicle” means a vehicle:

A. Built on a single chassis; and

B. Four hundred square feet or less when measured at the largest horizontal projection; and

C. Designed to be self-propelled or permanently towable by an automobile or light duty truck; and

D. Designed primarily for use as temporary living quarters for recreational, camping, travel, or seasonal use, not as a permanent dwelling.

“Regulatory floodplain” means the area of the special flood hazard area plus the protected area, as defined in SMC 13.12.300. The term also includes newly designated areas that are delineated pursuant to SMC 13.12.300(E).

“Riparian” means of, adjacent to, or living on the bank of a river, lake, pond, ocean, sound, or other water body.

“Riparian habitat zone” means the water body and adjacent land areas that are likely to support aquatic and riparian habitat as detailed in SMC 13.12.300(D)(2).

“Special flood hazard area (SFHA)” means the land subject to inundation by the base flood. Special flood hazard areas are designated on flood insurance rate maps with the letter “A” or “V” including AE, AO, AH, A1-99 and VE. The special flood hazard area is also referred to as the area of special flood hazard or SFHA.

“Start of construction” includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The “actual start” means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the “actual start of construction” means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

“Structure” means a walled and roofed building, including a gas or liquid storage tank that is principally above ground.

“Substantial damage” means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

“Substantial damage” also means flood-related damage sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, on the average, equals or exceeds 25 percent of the market value of the structure before the damage occurred.

“Substantial improvement” means any repair, reconstruction, rehabilitation, addition, replacement, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure either:

A. Before the “start of construction” of the improvement; or

B. Before damage occurred, if the structure has been damaged or is being restored.

Substantial improvement occurs with the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not the alteration affects external dimensions.

Substantial improvement includes structures that have incurred “substantial damage,” regardless of the actual repair work performed.

Substantial improvement does not include any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions.

“Variance (floodplain)” means a grant of relief from the requirements of this chapter that permits construction in a manner that would otherwise be prohibited by this chapter.

“Water typing” means a system for classifying water bodies according to their size and fish habitat characteristics. The Washington Department of Natural Resources’ forest practices water typing classification system is hereby adopted by reference. The system defines four water types:

A. Type “S” – Shoreline. Streams that are designated “shorelines of the state,” including marine shorelines.

B. Type “F” – Fish. Streams that are known to be used by fish or meet the physical criteria to be potentially used by fish.

C. Type “Np” – Non-fish perennial streams.

D. Type “Ns” – Non-fish seasonal streams.

“Waters of the state” includes lakes, rivers, ponds, streams, inland waters, underground water, salt waters, estuaries, tidal flats, beaches, and lands adjoining the seacoast of the state, sewers, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

“Zone” means one or more areas delineated on the FIRM. The following zones may be used on the adopted FIRM. The special flood hazard area is comprised of the A and V zones.

A	SFHA where no base flood elevation is provided.
A#	Numbered A Zones (e.g., A7 or A14), SFHA with a base flood elevation.
AE	SFHA with a base flood elevation.
AO	SFHA subject to inundation by shallow flooding usually resulting

	from sheet flow on sloping terrain, with average depths between one and three feet. Average flood depths are shown.
AH	SFHA subject to inundation by shallow flooding (usually pond areas) with average depths between one and three feet. Base flood elevations are shown.
B	The area between the SFHA and the 500-year flood of the primary source of flooding. It may also be an area with a local, shallow flooding problem or an area protected by a levee.
C	An area of minimal flood hazard, as above the 500-year flood level of the primary source of flooding. B and C zones may have flooding that does not meet the criteria to be mapped as a special flood hazard area, especially pond and local drainage problems.
D	Area of undetermined but possible flood hazard.
V	The SFHA subject to coastal high hazard flooding including waves of three feet or greater in height. There are three types of V zones: V, V#, and VE, and they correspond to the A zone designations.
X	The area outside the mapped SFHA.
X – Shaded	The same as a Zone B, above.

13.12.200 Floodplain administrator.

A. Administrator Designation. The ~~public works~~Planning and Community Development ~~d~~Director is hereby appointed as the floodplain administrator, to administer and implement this chapter by granting or denying floodplain development permit applications in accordance with its provisions.

B. Administrator Duties. The director's duties shall include, but shall not be limited to, the following:

1. Ensure that all development activities within the regulatory floodplain of the jurisdiction of the city meet the requirements of this chapter.

2. Review all floodplain development permits to determine that the permit requirements of this chapter have been satisfied.

3. Review all floodplain development permits to determine if the proposed development is located in the protected area. If located in the protected area, ensure that the provisions of SMC 13.12.600 are met.

4. Review all floodplain development permits to determine that all necessary permits have been obtained from those federal, state, or local governmental agencies from which prior approval is required, including those local, state or federal permits that may be required to assure compliance with the Endangered Species Act and/or other appropriate state or federal laws.

5. Delegate to the building official, or designee, the responsibility to inspect all development projects before, during, and after construction to ensure compliance with all provisions of this chapter, including proper elevation of the structure.

6. Maintain for public inspection all records pertaining to the provisions of this chapter.

7. Submit reports as required for the National Flood Insurance Program.

8. Notify FEMA of any proposed amendments to this chapter.

9. Cooperate with state and federal agencies to improve flood and other technical data and notify FEMA of any new data that would revise the FIRM.

C. Upon receipt of a permit for a development project within a floodplain, the director shall compare the elevation of the site to the base flood elevation. A development project is not subject to the requirements of this chapter if it is located on land that can be shown to be:

1. Outside the protected area; and

2. Higher than the base flood elevation.

D. The director shall inform the applicant that the project may still be subject to the flood insurance purchase requirements unless the owner receives a letter of map amendment from FEMA.

E. The director shall make interpretations where needed, as to the exact location of the boundaries of the regulatory floodplain, the SFHA and the protected area where there appears to be a conflict between the mapped SFHA boundary and actual field conditions as determined

by the base flood elevation and ground elevations. The applicant may appeal the director's interpretation of the location of the boundary to the hearing examiner according to the procedures described in SMC 20.30.200 through 20.30.270.

Attachment D - Critical Areas – General Provisions

20.80.010 Purpose.

A. The purpose of this chapter is to establish supplemental standards for the protection of critical areas, as defined in SMC 20.20.014, in compliance with the provisions of the Washington Growth Management Act of 1990 (Chapter 36.70A RCW) and consistent with the goals and policies of the Shoreline Comprehensive Plan in accordance with the procedures of Chapter 20.30 SMC. The standards of this chapter, as incorporated into the Shoreline Master Program, in SMC ~~20.230.030(A) General Regulations (1)~~20.240, shall apply within the shoreline jurisdiction, where critical areas are present. If there are any conflicts or unclear distinctions between the Master Program and the City's critical areas regulations, the most restrictive requirements apply as determined by the City.

B. By identifying and regulating development and alterations to critical areas and their buffers, it is the intent of this chapter to:

1. Protect the public from injury, loss of life, property damage or financial losses due to flooding, erosion, landslide, seismic events, or soils subsidence;

2. Protect unique, fragile and valuable elements of the environment;

3. Reduce cumulative adverse environmental impacts to water quality, wetlands, streams, and other aquatic resources, fish and wildlife habitat, landslide hazards, and other geologically unstable features and protect the functions and values of critical areas from overall net loss;

4. Ensure the long-term protection of ground and surface water quality;

5. Alert members of the public, including appraisers, assessors, owners, potential buyers, or lessees, to the development limitations of critical areas and their required buffers;

6. Serve as a basis for exercise of the City's substantive authority under the State Environmental Policy Act (SEPA) and the City's Environmental Procedures (Chapter 20.30 SMC, Subchapter 8); and comply with the requirements of the Growth Management Act (Chapter 36.70A RCW) and its implementing rules;

7. Establish standards and procedures that are intended to protect critical areas while accommodating the rights of property owners to use their property in a reasonable manner; and

8. Provide for the management of critical areas to maintain their functions and values and to restore degraded ecosystems.

C. This chapter is to be administered with flexibility and attention to site-specific characteristics. It is not the intent of this chapter to make a parcel of property unusable by denying its owner reasonable economic use of the property or to prevent the provision of public facilities and services necessary to support existing development and planned for by the community without decreasing current service levels below minimum standards.

Appendix A

SHORELINE MASTER PROGRAM

Goals, Policies, and Analysis

Shoreline Master Program Element Goals, Policies, and Analysis

INTRODUCTION

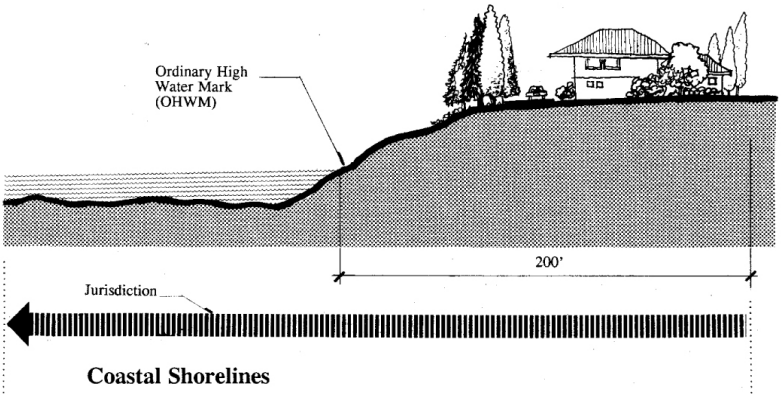
Washington's Shoreline Management Act (SMA) was passed by the Legislature in 1971 and adopted by the public in a 1972 referendum. The goal of the SMA is "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The SMA establishes a balance of authority between local and state government. Cities and counties are the primary regulators, but the State has authority to review local shoreline management programs and permit decisions.

The SMA has three broad policies:

- Encourage water-dependent and water-oriented uses: "uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the states' shorelines...."
- Promote public access: "the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the state shall be preserved to the greatest extent feasible consistent with the overall best interest of the state and the people generally."
- Protect shoreline natural resources, including "...the land and its vegetation and wildlife, and the water of the state and their aquatic life...."

Shoreline Jurisdiction

Under the SMA, the shoreline jurisdiction includes areas that are 200 feet landward of the ordinary high water mark (OHWM) of waters that have been designated as "shorelines of statewide significance". The City of Shoreline's shoreline area includes approximately 3.5 miles of Puget Sound coastline. There are no shorelines of statewide significance associated with rivers, streams, or freshwater lakes in the city or its Future Service Annexation Area (FSAA) of Point Wells.



Shoreline Master Programs

Under the SMA, each city and county adopts a Shoreline Master Program (SMP) that is based on State guidelines, but tailored to the specific needs of the community. Local SMPs combine both policies and regulations to guide and control development within the shoreline area. The plans are a comprehensive vision of how shoreline areas will be used and developed over time. Regulations are the standards that shoreline projects and uses must meet.

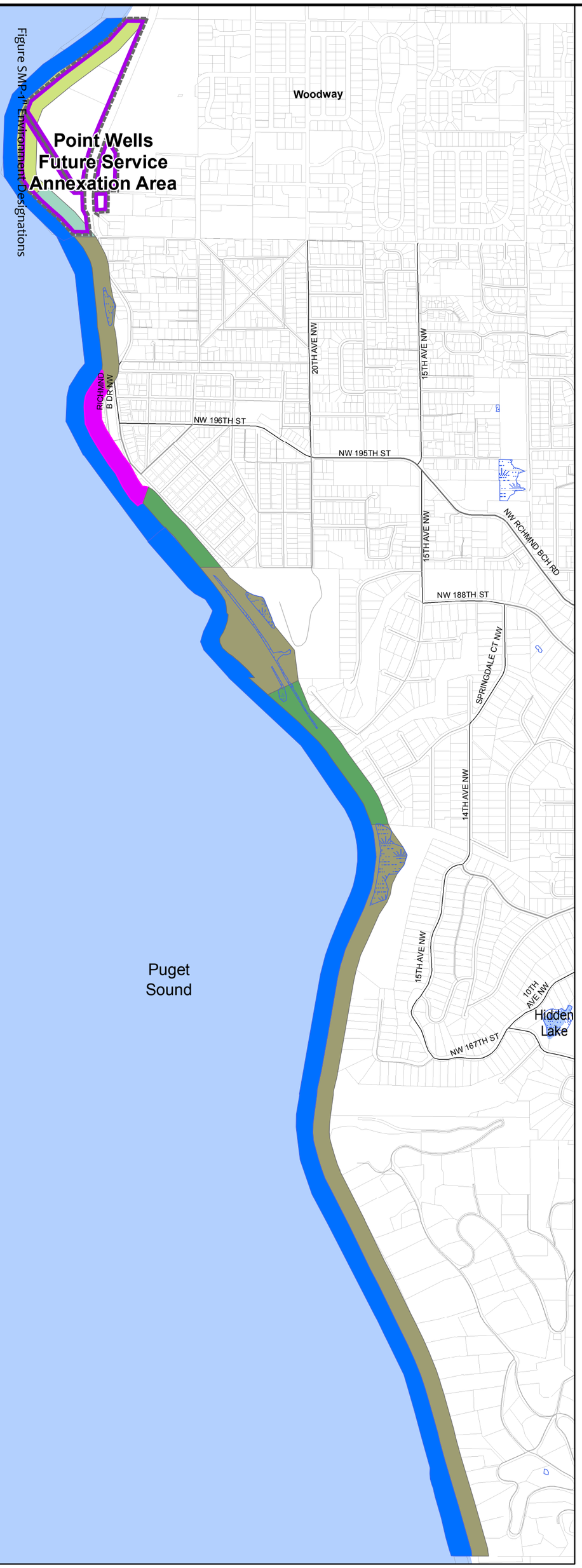
Driftwood

The City of Shoreline incorporated on August 31, 1995, and subsequently adopted the King County Shoreline Master Program (Ord. 23, 1995). With the adoption of the Comprehensive Plan in 1998, the City adopted a Shoreline Master Program Element that contained goals, policies and maps of shoreline environments. While largely consistent with the King County SMP, this newer SMP Element was not reviewed by Ecology, and therefore it did not qualify as part of the City's recognized SMP. The 2005 Comprehensive Plan contained an SMP Update Strategy, and in 2007 the City received a grant from the Department of Ecology to develop its own SMP, which was adopted by City Council on May 29, 2012. Because the SMP contains Goals and Policies, and Analysis, as well as regulations and other information, rather than recreate these elements within this Comprehensive Plan, the City of Shoreline's Shoreline Master Program is referenced at the following link in its entirety:
http://shorelinewa.gov/Modules/ShowDocument.aspx?documentid=11043

Environment Designations

Part of the process of drafting regulations involved classifying areas of the coastline according to their historic and existing conditions, and ecological function. This map is included as Figure SMP1.

Figure SMP-1 "Environment Designations"



CITY OF SHORELINE

City of Shoreline
COMPREHENSIVE PLAN

2012 City of Shoreline SMP Update Map

Proposed Shoreline Environment Designations

Environmental Designation

Type

- Aquatic
- Point Wells Urban
- Point Wells Urban Conservancy
- Shoreline Residential
- Urban Conservancy
- Waterfront Residential
- Wetland

N
W E
S

0 320 640 1,280 1,920 2,560
Feet

CITY OF SHORELINE

Data Source: City of Shoreline GIS
Projection: NAD_1983_HARN_StatePlane_Washington_North_FIPS_4601

Date: 12/26/2012

Shoreline Master Plan

Shoreline Master Program - Attachment E

Path: J:\GIS\Maps\PADS\CompPlan2012\ShorelineMasterProgram\SMP_Environment Designations_Update.mxd

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Attachment E(2)- SMP Appendix to Comprehensive Plan
Proposed text changes in legislative format

INTRODUCTION

Washington's Shoreline Management Act (SMA) was passed by the Legislature in 1971 and adopted by the public in a 1972 referendum. The goal of the SMA is "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The SMA establishes a balance of authority between local and state government. Cities and counties are the primary regulators, but the State has authority to review local shoreline management programs and permit decisions.

The SMA has three broad policies:

- Encourage water-dependent and water-oriented uses: "uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment or are unique to or dependent upon use of the states' shorelines...."
- Promote public access: "the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the state shall be preserved to the greatest extent feasible consistent with the overall best interest of the state and the people generally."
- Protect shoreline natural resources, including "...the land and its vegetation and wildlife, and the water of the state and their aquatic life...."

Shoreline Jurisdiction

~~Under the SMA, the shoreline jurisdiction includes areas that are 200 feet landward of the ordinary high water mark (OHWM) of waters that have been designated as "shorelines of statewide significance". The City of Shoreline's shoreline area includes approximately 3.5 miles of Puget Sound coastline. There are no shorelines of statewide significance associated with rivers, streams, or freshwater lakes in the city or its Future Service Annexation Area (FSAA) of Point Wells.~~

The SMA, and this Master Program, apply to all "shorelines of the state." Shorelines of the state include all "shorelines" and "shorelines of statewide significance" within Washington. Shorelines, as defined by the SMA, are all water areas together with the lands underlying them, which meet certain flow or acreage criteria. Shorelines of statewide significance are certain water areas that the Legislature has determined to have a unique character warranting special status and protection. Within the City of Shoreline there are only shorelines of statewide significance- the approximately 3.5 miles of Puget Sound coastline. No other water areas within Shoreline meet the criteria set forth in the SMA. In addition to the actual water areas, the SMA and this Master Program apply to shorelands. Shorelands are the area 200 feet landward of the ordinary high water mark (OHWM) of all waters subject to the SMA's provisions.

Shoreline Master Programs

Under the SMA, each city and county adopt~~s~~ a Shoreline Master Program (SMP) that is based on State guidelines, but tailored to the specific needs of the community. Local SMPs combine both policies and regulations to guide and control development within the shoreline area. The plans are a comprehensive vision of how shoreline areas will be

used and developed over time. Regulations are the standards that shoreline projects and uses must meet.

~~The City of Shoreline incorporated on August 31, 1995, and subsequently adopted the King County Shoreline Master Program (Ord. 23, 1995). With the adoption of the Comprehensive Plan in 1998, the City adopted a Shoreline Master Program Element that contained goals, policies and maps of shoreline environments. While largely consistent with the King County SMP, this newer SMP Element was not reviewed by Ecology, and therefore it did not qualify as part of the City's recognized SMP. The 2005 Comprehensive Plan contained an SMP Update Strategy, and in 2007 the City received a grant from the Department of Ecology to develop its own SMP, which was adopted by City Council on May 29, 2012. Because the SMP contains Goals and Policies, and Analysis, as well as regulations and other information, rather than recreate these elements within this Comprehensive Plan, the City of Shoreline's Shoreline Master Program is referenced at the following link in its entirety:~~
~~http://shorelinewa.gov/Modules/ShowDocument.aspx?documentid=11043~~
The Shoreline Management Act (SMA), chapter 90.58 RCW requires the City to have a shoreline master program setting forth goals, policies, and use regulations for those areas within the jurisdictional boundaries of the SMA. After incorporation, the City relied on King County's 1996 Shoreline Management Master Program for compliance with the SMA.

This changed in 2013 when the City's current Shoreline Master Program (SMP) was adopted on August 5, 2013 via Ordinance No. 668 and became effective on September 2, 2013. The City Council adopted updates to the SMP on May 6, 2019 via Ordinance No. 856. The SMP is codified at Division II of SMC Title 20, Chapters SMC 20.200, 20.210, 20.220, ~~and~~ 20.230, and 20.240. Title 20 can be accessed at the following link: https://www.codepublishing.com/WA/Shoreline/#!/html/Shoreline20/Shoreline20.html

The link to the 2019 SMP will live on the Comprehensive Plan web page: http://www.shorelinewa.gov/government/departments/planning-community-development/city-plans/comprehensive-plan-and-master-plans/comprehensive-plan.

ECONOMIC DEVELOPMENT ELEMENT

Goal Provide for economically productive uses that are particularly dependent on their shoreline location or use.

Objective Plan for economic activity that is water-dependent, water-related, or that provides an opportunity for a substantial number of people to enjoy the shoreline and water.

PUBLIC ACCESS ELEMENT

Goal Increase public access to publicly-owned areas of the shoreline.

Objective Provide for public access to publicly owned shoreline areas, except where deemed inappropriate due to safety hazards, inherent security problems, environmental impacts, or conflicts with adjacent uses.

RECREATIONAL ELEMENT

Goal Develop public and private recreation opportunities that are compatible with adjacent uses and that protect the shoreline environments.

Objective Provide for the preservation and enlargement of public and private recreational opportunities and recreational facilities along the shoreline, including but not limited to, parks and recreational areas, wherever appropriate.

CIRCULATION ELEMENT

Goal Provide inter-connected, efficient, and safe transportation networks to and around the shoreline to accommodate vehicles, transit, pedestrians, and cyclists.

Objective Provide for a safe and adequate circulation system, including existing and proposed major thoroughfares, transportation routes, terminals, and other public utilities and facilities within the shoreline jurisdiction that benefit permitted uses without degrading the environment or aesthetic values of the area.

SHORELINE USE ELEMENT

Goal Regulate land use patterns to locate activity and development in areas of the shoreline that will be compatible with adjacent uses and will be sensitive to existing shoreline environments, habitat, and ecological systems.

Objective Include protections for the natural environment and adjacent uses in the Shoreline Development Code, Point Wells Subarea Plan, Saltwater Park master planning efforts, and other regulatory framework for development along the shoreline.

CONSERVATION ELEMENT

Goal Conserve and protect the natural resources of the shoreline including, but not limited to scenic vistas, aesthetics, and vital estuarine areas for fisheries and wildlife protection.

Objective Through the use of best available science, develop and implement siting criteria, design standards, and best management practices that promote the long term enhancement of unique shoreline features, natural resources, and fish and wildlife habitat.

HISTORICAL/CULTURAL ELEMENT

Goal Identify, preserve, protect, and restore shoreline areas, buildings, and sites having historical, cultural, educational, or scientific values.

Objective Educate citizens on historical, cultural, and scientific significance of shoreline structures, amenities, and functions.

FLOOD HAZARD MANAGEMENT

Goal Protect the City of Shoreline and other property owners from losses and damage created by flooding along the coast and sea-level rise.

Objective Seek regional solutions to flooding problems through coordinated planning with state and federal agencies, other appropriate interests, and the public.

Objective Develop a plan to mitigate and adapt to potentially altered environmental conditions along the coastline resulting from climate change.

RESTORATION ELEMENT

Goal Improve water quality, reduce the impacts of flooding events; and restore natural areas, vegetation, and habitat functions.

Objective Seek funding for restoration projects within the shoreline jurisdiction and require development proposals to address habitat restoration and water quality.

Objective Engage in discussions with other municipalities that border the Puget Sound and BNSF railroad regarding efforts to benefit fish passage and nutrient transfer.

Attachment G:

TABLE OF CONTENTS

Note: Italicized terms in policies are explained in sidebars.

CITY OF SHORELINE

Shoreline Inventory and Characterization

Prepared for: **December 2008, Revised November 2009 and April 2010**
City of Shoreline
17544 Midvale Avenue N., Shoreline, WA 98133

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INTRODUCTION

Background and Purpose

The City of Shoreline (City), Washington is undertaking a comprehensive update to its Shoreline Master Program (SMP) as required by the implementing guidelines in the Washington Administrative Code (WAC). To support this effort, the City applied for and received a grant issued by the Washington State Department of Ecology (Ecology) (G0800171). This shoreline inventory and characterization study supports the SMP update process by providing a baseline inventory of existing conditions within the shoreline jurisdiction of the City.

In 2003, the Washington State Legislature passed Substitute Senate Bill (SSB) 6012, which established timelines for all cities and counties to amend their local shoreline master programs (SMPs) consistent with the Shoreline Management Act (SMA), RCW 90.58 and its updated implementing guidelines, Washington Administrative Code (WAC) 173-26. The City of Shoreline is required to prepare an update to its SMP by the end of 2009. The City prepared the first draft of this shoreline inventory and characterization report in 2004; however, the report was not formally adopted or finalized. The City's first step towards a comprehensive SMP update involves revising the 2004 draft report to update technical information that has changed or been made available since 2004, and to be consistent with the current state shoreline guidelines. This report provides:

- Analysis and characterization of ecosystem-wide processes that affect the City's shoreline;
- Analysis and characterization of shoreline functions; and
- Opportunities for protection, restoration, public access and shoreline use.

The inventory and characterization documents current shoreline conditions and provides a basis for updating the City's SMP goals, policies and regulations. This report will help the City establish a baseline of conditions, evaluate functions and values of resources in its shoreline jurisdiction, and explore opportunities for conservation and restoration of ecological functions.

This inventory and characterization report also includes a map folio, located at the end of the document. All figures referenced in the document are found in the map folio.

Shoreline Jurisdiction and Study Area Boundary

Under the SMA, the shoreline jurisdiction includes all submerged lands waterward of the ordinary high water mark (OHWM) of waters that have been designated as "shorelines of statewide significance" or "shorelines of the state," as well as those areas that are 200 feet landward of the OHWM of these same waters. The shoreline jurisdiction criteria were established in 1972, and are described in Washington Administrative Code (WAC) 173-18. Generally, "shorelines of statewide significance" include portions of Puget Sound and other marine water bodies, rivers west of the Cascade Range that have a mean annual flow of 1,000 cubic feet per second (cfs) or greater, rivers east of the Cascade Range that have a mean annual flow of 200 cfs or greater, and freshwater lakes with a surface area of 1,000

acres or more. "Shorelines of the state" are generally described as all marine shorelines and shorelines of all other streams or rivers having a mean annual flow of 20 cfs or greater and lakes with a surface area greater than 20 acres.

The City's shoreline jurisdiction includes the Puget Sound shore within both the city limits and its potential annexation area (PAA). The portion of Puget Sound seaward from the line of extreme low tide is considered a "shoreline of statewide significance" per RCW 90.58.030(2)(e). The remainder of the Puget Sound landward of the extreme low tide mark is considered a "shoreline of the state." The City therefore includes approximately four miles of Puget Sound coastline. There are no rivers, streams or lakes in the City meeting the definition of "shorelines of the state."

Under the SMA, the shoreline area to be regulated by the City's Shoreline Master Program must include all shorelines of statewide significance, shorelines of the state, and their adjacent shorelands, which are defined as the upland area within 200 feet of the OHWM, as well as any associated wetlands (RCW 90.58.030) within its municipal jurisdiction. Since the SMP is in part a long-range planning document, this characterization report includes those marine shorelines within the city limits as well as the PAA. One-half mile of the Puget Sound is located in the City's PAA. The City's PAA is known as Point Wells, located directly north of the city in unincorporated Snohomish County (Maps 1 and 1-A).

The City's shoreline jurisdiction extends to the landward edge of associated wetlands. "Associated wetlands" means those wetlands that are in proximity to and either influence or are influenced by tidal waters or a lake or stream subject to the SMA (WAC 173-22-030 [1]). These are typically identified as wetlands that physically extend into the shoreline jurisdiction, or wetlands that are functionally related to the shoreline jurisdiction through surface water connection and/or other factors. The specific language from the RCW describes the limits of shoreline jurisdiction as follows:

"those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred feet from such floodways; and all associated wetlands and river deltas" (RCW 90.58.030[2][f]).

Wetlands associated with SMA regulated waters are limited to intertidal wetlands, mapped throughout the city limits along Puget Sound, and smaller wetlands associated with the lower reaches and mouths of Barnacle and Coyote (also known as Innis Arden South) Creeks.

Shoreline Planning Segments

For the purposes of this study, the City's shoreline jurisdiction was organized into five distinct segments (A through E) based broadly on the physical distinction along the shoreline, the level of ecological functions provided by each segment, as well as existing land uses and zoning designations. Shoreline Planning Segments are described in Table 1 and depicted on Map 1.

Table 1. Shoreline Planning Segments

Shoreline Segment	Approximate Length (feet)	Approximate Segment Acreage	General Boundaries
A	3,411	15.6	Potential Annexation Area / Point Wells: located directly north of the city limits in unincorporated Snohomish County.
B	4,724	21.7	Richmond Beach residential area: the Snohomish County line south to Richmond Beach Saltwater Park.
C	2,801	11.0	Richmond Beach Saltwater Park south to Storm Creek culvert.
D	1,295	5.7	Innis Arden residential area: south of Richmond Beach Saltwater Park to Innis Arden Reserve Park.
E	9,424	41.6	Innis Arden Reserve / Highlands: Innis Arden Reserve Park south to city limits.

Source: City of Shoreline, 2002

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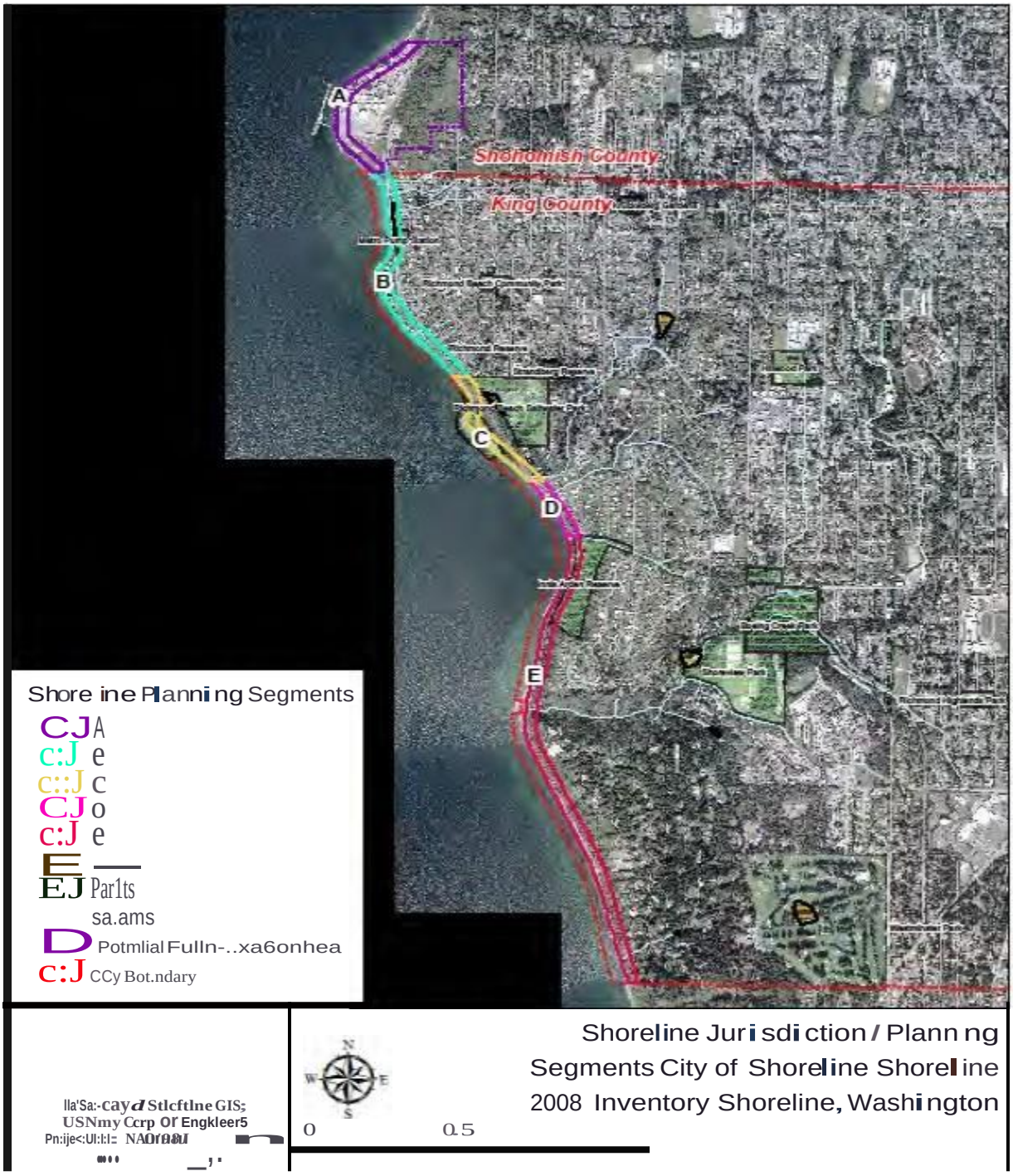
Map 1: Shoreline Planning Segments



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CURRENT REGULATORY FRAMEWORK SUMMARY[1]

City of Shoreline Regulations

Current Shoreline Management Act Compliance

The Shoreline Management Act is implemented through the development of local Shoreline Master Programs (SMPs). Local SMPs establish a system to classify shoreline areas into specific "environment designations." The purpose of shoreline environment designations is to provide a uniform basis for applying policies and use regulations within distinctly different shoreline areas. In a regulatory context, shoreline environment designations provide the governing policy and regulations that apply to land within the SMP jurisdiction. Portions of individual parcels that are outside SMP jurisdiction are governed by zoning and other applicable land use regulations. Generally, environment designations should be based on existing and planned development patterns, biological and physical capabilities and limitations of the shoreline, and a community's vision or objectives for its future development.

When the City of Shoreline incorporated in 1995, it adopted regulations outlined in Title 25 (Shoreline Management Plan) of the King County Code as the interim shoreline management code (Shoreline Municipal Code [SMC] 16.10). Shoreline properties within the City's PAA are regulated under the Snohomish County SMP, until such properties are annexed and the City's SMP is amended. During development of the City of Shoreline's first comprehensive plan in 1998, the City evaluated the natural and built characteristics of its shoreline jurisdiction and developed five preliminary shoreline environment designations:

Urban Railroad (for developed portions of the Burlington Northern Santa Fe [BNSF] Railway throughout the City's shoreline jurisdiction),

- Urban - High Intensity,

Suburban - High Residential,

- Suburban - Low Residential, and

Conservation.

These preliminary shoreline environment designations have not been approved by Ecology, since they were not part of a comprehensive update to the City's SMP. Therefore, they are not being implemented as part of Shoreline's interim shoreline management code.

[1] The discussion of regulatory requirements included herein is not intended to be a complete list of all permits or approvals necessary for work within the City's shoreline jurisdiction or other areas within the city or PAA. Other portions of local code and state and federal regulations may apply to development projects within the city. The permits and approvals necessary for construction may vary from parcel to parcel regardless of shoreline jurisdiction and may vary depending on the type and intensity of the work proposed. Prior to any construction within city limits, an applicant should contact the City and the applicable state and federal agencies to determine actual permit requirements. For development of parcels in the PAA outside of the city limits, an applicant should contact Snohomish County and the applicable state and federal agencies to determine actual permit requirements.

Comprehensive Plan, Zoning and Other City Regulations

- City of Shoreline *Comprehensive Plan* – The City's existing *Comprehensive Plan* was adopted in 2001. The *Comprehensive Plan* establishes goals and policies that define the community's vision for the physical, economic, and social development of the City for the next 20 years. The *Comprehensive Plan* land use designations in the Puget Sound shoreline planning area include Mixed Use (Point Wells), Low Density Residential, Public Facilities (e.g., the BNSF Railway right-of-way), Public Open Space, and Private Open Space (City of Shoreline, 2001). City land use designations are relevant to this shoreline inventory and characterization report as they establish the general land use patterns and vision of growth the City has adopted for areas both inside and outside the shoreline jurisdiction. The City's SMP goals and policies are one element of the *Comprehensive Plan* (included as an appendix). During this update process, the City will update its SMP element goals and policies and integrate them with the GMA comprehensive plan requirements for administrative and regulatory reform.
- City of Shoreline Municipal Code, Chapter 20.40: Zoning – Chapter 20.40 of the SMC (Zoning and Use Provisions) establishes zoning designations. Zoning designations in the Puget Sound shoreline planning area include: Residential 4 units/acre (R-4) and Residential 6 units/acre (R-6) (City of Shoreline, 2006). Point Wells, located in the City's PAA, is zoned Heavy Industrial (HI) by the Snohomish County Zoning Code (Snohomish County website, 2008).
- City of Shoreline Municipal Code, Chapter 20.80: Critical Areas – Chapter 20.80 of the SMC (Critical Areas) establishes development standards, construction techniques, and permitted uses in critical areas and their buffers (i.e., geologic hazard areas, fish and wildlife habitat conservation areas, wetlands, flood hazard areas, aquifer recharge areas, and stream areas) to protect these areas from adverse impacts. Designated critical areas are found throughout the City's shoreline planning area, particularly wetlands and streams, flood hazard areas, and geologic hazard areas (City of Shoreline, 2007a).
- City of Shoreline *Surface Water Master Plan* – The City's Surface Water Master Plan was adopted in 2005. The plan identifies surface water problems, prioritizes needs, and provides long-term solutions that reflect the community's priorities and can be funded by the City. The Plan includes an analysis of vegetation and wildlife habitat and water resources in relation to the control and treatment of stormwater (City of Shoreline, 2005b).

State and Federal Regulations

A number of state and federal agencies may have jurisdiction over land or natural elements in the City's shoreline jurisdiction. Local development proposals most commonly trigger requirements for state or federal permits when they impact wetlands or streams; potentially affect fish and wildlife listed under the federal Endangered Species Act (ESA); result in over one acre of clearing and grading; or affect the floodplain or floodway. As with local requirements, state and federal regulations may apply throughout the City, but regulated resources are common within the City's shoreline jurisdiction. The state and federal regulations affecting shoreline-related resources include, but are not limited to:

- Endangered Species Act: The federal ESA addresses the protection and recovery of federally listed species. The ESA is jointly administered by the National Oceanic and Atmospheric Administration (NOAA) Fisheries (formerly referred to as the National Marine Fisheries Service), and the United States Fish and Wildlife Service (USFWS).
- Clean Water Act (CWA): The federal CWA requires states to set standards for the protection of water quality for various parameters, and it regulates excavation and dredging in waters of the U.S., including wetlands. Certain activities affecting wetlands in the City's shoreline jurisdiction or work in the adjacent rivers may require a permit from the U.S. Army Corps of Engineers and/or Washington State Department of Ecology under Section 404 and Section 401 of the CWA, respectively.
- Hydraulic Project Approval (HPA): The Washington Department of Fish and Wildlife (WDFW) regulates activities that use, divert, obstruct, or change the natural flow of the beds or banks of waters of the state and may affect fish habitat. Projects in the shoreline jurisdiction requiring construction below the OHWM of Puget Sound or streams in the city could require an HPA from WDFW. Projects creating new impervious surface that could substantially increase stormwater runoff to waters of the state may also require approval.
- National Pollutant Discharge Elimination System (NPDES): Ecology regulates activities that result in wastewater discharges to surface water from industrial facilities or municipal wastewater treatment plants. NPDES permits are also required for stormwater discharges from industrial facilities, construction sites of one or more acres, and municipal stormwater systems that serve populations of 100,000 or more.
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WATERSHED AND DRAINAGE BASINS

Water flow drives many ecological processes; therefore a useful characterization study area is the watershed. In Washington State, watersheds at a large scale are organized into Water Resource Inventory Areas (WRIAs). The City of Shoreline is located within the

Lake Washington/ Cedar/ Sammamish Watershed (WRIA 8). The City is located the northwest portion of the watershed and includes two subareas: the Nearshore Subarea, which includes the 4 miles of shoreline in the City of Shoreline and another twenty miles north and south of the City, and the Lake Washington Subarea.

Surface water drainage basins in the City include portions of the McAleer Creek, Lyons Creek, West Lake Washington, Thornton Creek, Seattle Golf Course, Bitter Lake and two Middle Puget Sound drainage basins, and most of the Boeing Creek drainage basin (see Map 2 in Appendix C). McAleer, Lyons, West Lake Washington, and Thornton Creeks drain to Lake Washington. Boeing Creek, Seattle Golf Course, Bitter Lake and the Middle Puget Sound basins drain to Puget Sound (City of Shoreline, 2005b). The features of the basins that drain to Puget Sound are discussed in more detail below:
Boeing Creek Basin: Boeing Creek is partially piped from its origin and discharges into Puget Sound, passing through the City's shoreline planning area.
Seattle Golf Course Basin: This 138 acre basin is located in the southwest portion of the city, with a small portion located in the City of Seattle. The runoff from the Seattle Golf Course Basin used to be collected in a wetland and infiltrated into the groundwater. The basin now discharges into Highlands Creek which then discharges into Puget Sound.

Bitter Lake Basin: Only 54 acres of this basin is located in the city, in its southwest portion. None of the basin's major watercourses are located within the city.

Middle Puget Sound Basins: The North and South basins enter Puget Sound through dozens of small creeks and storm drainage systems. The seven major drainage courses include: Highlands Creek, Blue Heron Creek (also known as Innis Arden North Creek), Coyote Creek (also known as Innis Arden South Creek), Storm Creek, Upper Barnacle Creek (also known as Upper Puget Sound North) and Lower Barnacle Creek (also known as South), Barnacle Creek, and Lost Creek. All the creeks originate from wetlands, urban runoff or hillside seeps, except that the headwaters of Upper and Lower Barnacle Creeks and Lost Creek are located to the north in Snohomish County.

Just two drainage basins drain to the shoreline planning area: Boeing Creek Basin and Middle Puget Sound Basin (see Map 4 in Appendix C). There are numerous surface water features conveyed through culverts into Puget Sound in addition to the creeks mentioned above. Drainages and streams are discussed in more detail in Section 5.8 *Streams* and include Lost Creek, Upper and Lower Barnacle Creeks, Barnacle Creek, Storm Creek, Blue Heron Creek, Coyote Creek, Boeing Creek, and Highlands Creek.

LAND USE PATTERNS

Land use in the City of Shoreline is largely influenced by the city's central geographical location and proximity to Puget Sound. The City is generally bounded by the City of Lake Forest Park to the east, the City of Seattle to the south, the Puget Sound shoreline to the west, and Snohomish County to the north, which includes the Cities of Edmonds and Mountlake Terrace, and the Town of Woodway. The City's shoreline jurisdiction is composed of a variety of natural and man-made characteristics that include natural

beaches, wooded slopes, single-family homes, the BNSF Railway, and in the annexation area of Point Wells, an industrial port. Point Wells, a 100-acre industrial site located directly north of the City along Puget Sound, is currently under Snohomish County jurisdiction and is a potential annexation area for the City of Shoreline (City of Shoreline, 2005a).

Historical Land Use

The first major development along the Puget Sound coastline in the City occurred when the Great Northern Railroad was built along the water in 1891 (HistoryLink.org website, 1999). The railroad line provided a direct transportation link to downtown Seattle. In 1901, the Portland Ship Building Company built a shipyard at what is now the Point Wells site. Another historical landscape alteration that occurred along the coastline was the processing of sand and gravel at the current location of Richmond Beach Saltwater Park (see background of the photograph below, ca 1910). Over time, continued logging and residential development resulted in the landscape as seen today (Shoreline Historical Museum website, 1999).

Source: Shoreline Historical Museum

Existing Land Use

Residential Land Use

The City of Shoreline is predominately occupied by residential land uses, which support commercial and retail uses, various institutional uses, and a few industrial uses. Residential single-family development occupies approximately 51 percent of the land use

in the community. Multi-family residential development occupies 4 percent and is primarily located near commercial areas along State Route 99 (also known as Aurora Avenue North) and in neighborhood centers (i.e., Richmond Beach, Echo Lake, North City, and Ballinger) (City of Shoreline, 2005a).

Several neighborhoods are located near the Puget Sound shoreline within the City. Neighborhoods include Richmond Beach (a portion of which is located immediately adjacent to the Puget Sound), Innis Arden, and the Highlands (City of Shoreline, 2005a). Residential development in the Puget Sound shoreline planning area is characterized by single-family properties, which occupy approximately 19 percent of the total shoreline planning area. Single-family residential uses which are located immediately adjacent to the Puget Sound abut the City's shoreline for a length of 1,886 linear feet. That is approximately 9 percent of the total linear length of the City's Puget Sound shoreline, including the PAA (King County, 2007). With the exception of residential properties in Segment B, the extensive bluff system along Puget Sound (Photo E-3 in Appendix B) precludes extensive development within the City's shoreline jurisdiction.

Commercial and Industrial Land Uses

Commercial and industrial developments occupy approximately 4 percent of the land use within the City (City of Shoreline, 2005a). Point Wells is the only industrial property located along the Puget Sound shoreline and occupies approximately 20 percent of the total shoreline planning area (Photo A-1 in Appendix B). The Point Wells industrial facility abuts the City's Puget Sound shoreline for a length of 3,411 linear feet. That is approximately 16 percent of the total linear length of the City's Puget Sound shoreline (Snohomish County, 2007b). The City's 1998 *Comprehensive Plan*, adopted prior to the current 2005 *Comprehensive Plan*, indicated that the Point Wells property served as a petroleum product (gasoline and diesel fuel) marketing and distribution center for approximately 60 years or more (City of Shoreline, 1998b). The petroleum distribution center discontinued operation in 1994. An asphalt plant was operated at the site on a seasonal basis by the Chevron Corporation (Sound Transit, 1999b). The property was sold to Paramount of Washington in 2005 and is now used for petroleum products storage, processing and distribution. Soil and groundwater contamination are documented at the Point Wells facility (Snohomish County, 2007a).

Private and Public Utility Land Uses

Public facilities, institutions and right-of-way uses occupy approximately 29 percent of the City (City of Shoreline, 2005a). The BNSF Railway right-of-way extends in a north-south direction along the entire length of the city's shoreline planning area. It is the most dominant land use in the shoreline, occupying 48 percent of the total shoreline planning area. The BNSF Railway right-of-way abuts the City's Puget Sound shoreline (including the PAA) for a length of 15,398 linear feet. That is approximately 70 percent of the total linear length of the City's Puget Sound shoreline, including the PAA (King County, 2007).

There are two public facilities in the City's shoreline planning area, both of which are owned by King County. The first is right-of-way property located at the Point Wells site in Segment A. A conveyance system and marine outfall will be constructed on the

property to serve the regional King County Brightwater Treatment Plant currently being constructed. The second property is located in Segment B which houses a King County wastewater pump station, known as the Richmond Beach Pump Station. A recreation easement has been obtained by the City to develop a park on this property, as described in more detail in Section 7.3.2 *Richmond Beach Pump Station Park Project* (City of Shoreline website, 2008).

Parks, Open Space and Vacant Land Uses

Only 1 percent of the City of Shoreline is undeveloped land. Parks, recreation, and open space (including lakes) occupy approximately 10 percent of the City (City of Shoreline, 2005a). Within the Puget Sound shoreline planning area, 8 percent of the land is occupied by parks and open space including the Richmond Beach Saltwater Park in Segment C and the Innis Arden Reserve in Segment E (Photos C-2 and E-1 in Appendix B; Map 11 in Appendix C). Four percent (960 lineal feet) of the properties that abut the City's Puget Sound shoreline (including the PAA) are occupied by park and reserve. Vacant properties occupy 2 percent of the total shoreline planning area and are located in Segments B and E. (King County, 2007).

Comprehensive Plan / Zoning Designations

Comprehensive Plan

According to the City of Shoreline Comprehensive Plan Map (2001), the City's shoreline planning area is largely comprised of properties designated as Low Density Residential and Public Facilities (i.e., the BNSF Railway right-of-way). Public Open Space and Private Open Space designations occupy the remainder of the shoreline planning area. In addition, the annexation area currently occupied by the Paramount of Washington facility in unincorporated Snohomish County is discussed in the *Comprehensive Plan* (2005a) and is currently designated as Mixed Use (see Map 9a in Appendix C) (City of Shoreline, 2001). Snohomish County designates Point Wells as Urban Industrial (Snohomish County website, 2008). The property owner has petitioned the County to change the Comprehensive Plan designation to Urban Center (Snohomish County, 2007a).

General goals and policies established in the 2005 *Comprehensive Plan* related to the protection of natural features encourage the protection and improvement of the natural environment and environmentally critical areas, construction of surface water facilities that promote water quality and enhance and preserve natural habitat, identification and protection of wildlife corridors, and preservation of wetlands, aquatic and riparian habitats and Puget Sound buffers (City of Shoreline, 2005a).

The general goals and policies of the City's 1998 Shoreline Master Program are included in the 2005 *Comprehensive Plan* as an appendix. Water-oriented uses are encouraged but must be balanced with the protection of Puget Sound shoreline's natural resources (City of Shoreline, 2005a).

Zoning Designations

Zoning designations in the City of Shoreline generally follow land use designations as discussed above. There are only two zones within the City's Puget Sound shoreline

planning area; Residential 4 units/acre (R-4) and Residential 6 units/acre (R-6). The zones encompass the BNSF Railway right-of-way, parks, open space, and public facilities (see Map 8 in Appendix C) (City of Shoreline, 2002). Point Wells is zoned as Heavy Industrial (HI) in the Snohomish County Permit, Planning, and Zoning Map (Snohomish County website, 2008). The property owner has petitioned the County to change the zoning to Planned Community Business (Snohomish County, 2007a).

Table 2 identifies the relative percentage of existing land uses in each planning segment based on 2007 King County and Snohomish County Assessor land use records. Table 2 also includes the *Comprehensive Plan* land use and zoning designations for each segment.

Impervious Surface

Impervious areas in the City were analyzed based on the King County Impervious/Impacted Surface Interpretation dataset (see Map 14 in Appendix C) (King County, 2004). The dataset is based on high-resolution multispectral imagery from 2000. It includes mostly surfaces with high to complete impermeability, such as concrete, asphalt, roofing materials and other sealed surfaces that prevent the natural penetration of water into soil. Examples of impervious surfaces identified in this imagery include: building roof tops regardless of composition or construction; roadways, highways and parking lots constructed of concrete or asphalt; parking areas with a high density of parked vehicles as represented by the imagery; sidewalks, pedestrian walkways and malls constructed of concrete, asphalt or brick; and, other prepared surfaces such as bicycle paths, tennis courts and running paths.

Impervious surfaces reduce the potential for stormwater infiltration and increase stormwater runoff, including the rate of runoff and timing of peak flows. In general, higher percentages of impervious area are an indicator of development density and intensity which is tied to an increase in stormwater runoff. Impervious surfaces may contain pollutants that are harmful to water quality. Pollutants originating in the shoreline planning area likely originate from landscaped areas (e.g., parks and residential yards), BNSF Railway (e.g., creosote railroad ties and railroad cars), industrial facilities (e.g., overwater structures), and, to a lesser extent, vehicles and roadways. The approximate impervious area has been determined based on a qualitative assessment of the 2004 King County dataset and 2002 aerial photography, and from coordination with City staff in 2003. Impervious surface at the Point Wells facility in Segment A was estimated visually based on 2002 aerial photography of the site. Table 2 includes the approximate amount of impervious area within each shoreline planning segment. Overall, approximately 20 percent of the City's shoreline planning area is impervious due to concrete, asphalt, roofing surfaces or other sealed surfaces. The PAA contains the highest impervious area due to historic heavy industrial uses. Segment B contains 25 to 30 percent impervious area due to residential development near the shoreline. Segment E, which comprises nearly half of the shoreline planning area (43.5%) has fairly low impervious surface (approximately 5 to 15 percent). Thus, stormwater runoff and infiltration rates are not as altered in Segment E in comparison to Segments B and D.

Table 2. Percentages of Existing, Allowed and Planned Land Use and Impervious Surfaces by Segment in Puget Sound Shoreline Planning Area

Shoreline Segment	Existing Land Use (Includes approximate percentage within each segment)		*Comprehensive Plan* Land Use Designations	Existing Zoning (Includes approximate percentage of each zoned area within each segment)		Approximate Impervious Area[2]
A	Petroleum Facility King County Right-of-Way (ROW)	95% 5%	Mixed Use (City of Shoreline *Comprehensive Plan*)	Heavy Industrial (Snohomish County Zoning)	100%	60-70%[3]
B	Single Family Residential BNSF Railway ROW Utility Vacant	42% 42% 10% 5%	Public Facilities Low Density Residential Public Open Space	Residential, 6 units/acre (R-6) Residential, 4 units/acres (R-4)	98% 2%	50-60%
C	BNSF Railway ROW Park Single-Family Residential	61% 34% 4%	Public Facilities Public Open Space Low Density Residential	Residential, 4 units/acre (R-4)	100%	5-10%
D	Single-Family Residential BNSF Railway ROW	52% 48%	Low Density Residential Public Facilities	Residential, 4 units/acre (R-4)	100%	15-25%
E	BNSF Railway ROW Single-Family Residential Open Space Vacant	72% 17% 10% 1%	Public Facilities Private Open Space Low Density Residential	Residential, 4 units/acre (R-4)	100%	5-15%

Sources: City of Shoreline, 2002; Snohomish County 2007; King County, 2004 and 2007.

[2] Approximate impervious area is based on King County data (2004), aerial photo interpretation and coordination with City staff in 2003.
[3] Impervious surface at the Point Wells facility in Segment A was estimated in 2003 based on aerial photography of the site showing the presence of a barge dock, rail line, and tanks within the shoreline environment.

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Existing and Planned Public Access Sites

Public access to the Puget Sound shoreline in the City of Shoreline is restricted to existing parks. Rugged terrain characterized by steep bluffs occurs throughout most of the shoreline planning area, which limit physical access to the water. Further, the BNSF railroad tracks parallel the entire shoreline within city limits. Public access to the railroad right-of-way is prohibited. Waterward public access is restricted in some areas by privately owned tidelands (including BNSF, residential and industrial property owners). Existing parks and open space areas in the City's shoreline planning area include (see Map 11 in Appendix C) (City of Shoreline, 2005c):

Richmond Beach Saltwater Park (Public) – This regional 40-acre park located in Segment C provides active and passive uses including picnic areas, shelter buildings, a playground area, observation areas, trails, and Puget Sound shoreline beach access (Photos C-2 and C-3 in Appendix B). Park users occasionally use the shoreline access for swimming in Puget Sound during favorable weather conditions.

Blue Heron Reserve (Private) – This private tract is preserved as a natural area and is associated with Blue Heron Creek. It is located in the southern portion of Segment C. No public shoreline access is permitted along the tract.

Coyote Reserve (Private) – This private tract is preserved as a natural area and is associated with Coyote Creek. It is located in the northern portion of Segment D. No public shoreline access is permitted along the tract.

Innis Arden Reserve (Public) – This 23-acre natural open space area/greenway passive-use park is located in the northern area of Segment E along the bluffs overlooking Puget Sound. Hiking/walking trails represent the main activity of this passive-use reserve. Although trails eventually lead to the shoreline, the public has to cross the BNSF railroad tracks and riprap to reach the Puget Sound shoreline beach (Photo E-1 in Appendix B).

Boeing Creek Reserve (Private) – Four acres of natural area associated with Boeing Creek along the Puget Sound shoreline in the center portion of Segment E is preserved as private open space. No publicshoreline access is permitted from this reserve along the bluff (Photo E-2 in Appendix B).

Improvements and enhancements to existing park and open space resources along Puget Sound identified in the City's Parks, Recreation and Open Space Plan (2005c) include: Richmond Beach Saltwater Park - As outlined in the Plan, a Community Attitude and Interest Survey was conducted to establish priorities for the future development of parks and recreation facilities, programs and services within the city. The City surveyed 575 residents in the community. Thirty-one percent of the respondents selected upgrading Richmond Beach Saltwater Park as one of the four most important actions the City should take[4]. Largely in response to the survey, the City is currently in the process of adding viewpoints and interpretive signage, and improving trails (see Section 7.3.3 *Richmond Beach Saltwater Park Project* for more details). Additional improvements and enhancements identified by the Plan that would be implemented at a later date include developing an underwater marine park, a pier, and a trail along Puget Sound to connect the park to Innis Arden Reserve.

[4] The other three actions were to upgrade existing neighborhood parks and play grounds (38%), upgrade natural areas and nature trails (30%), and improve shoreline and beach access (29%).

Innis Arden Reserve - Improving trail system, developing overlook viewpoints and interpretive signage, stabilizing slopes, enhancing vegetation and developing safe access to Puget Sound across the BNSF Railway right-of-way.

As part of King County mitigation for impacts from the Brightwater Treatment Plant project, a new park will be installed at the King County Richmond Beach Pump Station. Improvements to the site will include construction of a small parking area, restroom, interpretive watchtower overlooking the BNSF railroad and Puget Sound, and play areas. No shoreline access west of the BNSF railroad is proposed (see Section 7.3.2 *Richmond Beach Pump Station Park Project* for more details) (City of Shoreline website, 2008).

The City of Shoreline's *Comprehensive Plan* provides a list of funded and unfunded parks, recreation, open space and city facility capital improvements. Opportunities for enhancing public access to the shoreline under consideration include development of a trail system along Puget Sound between Richmond Beach Saltwater Park and Innis Arden Reserve, amenity enhancements and development of overlooks, viewpoints, and interpretive signage, and habitat and native plant restoration at Innis Arden Reserve, construction of a pedestrian crossing from Richmond Beach Pump Station park site to the beach, and providing beach access at the Boeing Creek Reserve (City of Shoreline, 2004; City of Shoreline, 2005a).

Roads and Transportation Facilities

The BNSF railroad runs the length of the Puget Sound shoreline in the city abutting the shoreline for a length of 15,398 linear feet. That is approximately 70 percent of the total linear length of the City's Puget Sound shoreline, including the PAA (King County, 2007). The developed and undeveloped portions of the BNSF Railway right-of-way occupy approximately 48 percent of the City's shoreline planning area (King County, 2007), varying in width from 100 feet to greater than 300 feet. The rail line provides freight movement and intercity passenger rail. The rail line serves as the region's primary rail freight connection to the north, as well as a major connection to the east, and is an important link in the multimodal system supporting the Ports of Everett, Seattle, and Tacoma. An average of 36 freight trains, six Amtrak passenger trains and six Sound Transit Sounder passenger trains use the railway each day (Herrera Environmental Consultants, 2005). Unattached engines also traverse between cities along the rail line. The Sounder is operated by Sound Transit, the Central Puget Sound Regional Transit Authority. It is a commuter rail service located along a 35-mile corridor between Everett and Seattle that uses the existing BNSF Railway right-of-way. Amtrak trains use the existing right-of-way between Vancouver, BC and Portland, Oregon. (Sound Transit, 1999a; Sound Transit website, 2008; Amtrak website, 2008).

BNSF Railway is proposing to install a train traffic signal, utility bungalow, and retaining wall south of Richmond Beach Saltwater Park in Segment C. This would involve filling a minimal amount (less than ½ an acre) of freshwater wetland. BNSF Railway is also proposing to install train traffic signals, a utility bungalow, a train-switching mechanism, retaining wall, and a new access road north of Boeing Creek in Segment E. The improvements will involve filling 0.25 acres of freshwater wetland. BNSF Railway will

also be installing improvements in other locations along the BNSF rail line between Everett and Seattle outside of Shoreline city limits. Sound Transit will pay for the improvements in order to meet conditions established in a joint agreement between BNSF and Sound Transit. These conditions are required of Sound Transit in order to run a third daily Sounder commuter train between Everett and Seattle. Mitigation for the wetland fill and impacts from these improvements will occur off-site at the Qwuloolt restoration site in Marysville and Meadowdale Marina in Edmonds. Construction is expected to begin in 2009 (Herrera, 2005).

Due to the topography of the Puget Sound shoreline and the private ownership of the BNSF Railway along the extent of the shoreline, the only major roadway that falls within the City's shoreline planning area is Richmond Beach Drive NW (see Map 10 in Appendix C). Richmond Beach Drive NW is the primary roadway that allows access to thirty-two residences along the shoreline in the northwestern portion of the city. The residences span a total of 1,886 linear feet along the shoreline (King County, 2007). The homes are accessed from Richmond Beach Drive NW via the Richmond Beach Overcrossing Bridge which passes over the BNSF railroad tracks. The Bridge connects to 27th Avenue NW, a local road located behind the residences that runs parallel to the Puget Sound shoreline. 27th Avenue NW is also the only motor vehicle access west of the BNSF Railway right-of-way in the city via the Bridge (see Map 1B in Appendix C). The timber bridge was originally built in 1923 and rebuilt in 1956. The City is planning to replace it with a reinforced concrete bridge. Once the City finalizes negotiations with BNSF Railway on a temporary construction easement, project cost sharing and construction issues, construction will begin (City of Shoreline website, 2008).

Wastewater and Stormwater Utilities

The Ronald Wastewater District (RWD), formerly known as the Shoreline Wastewater Management District (SWMD), provides wastewater service to a majority of the City of Shoreline and includes the Point Wells property. Highlands Sewer District serves the Highlands Neighborhood in the southwest portion of the City. Wastewater collected from RWD is treated at two facilities under contract arrangements: King County Wastewater Treatment Division's (WTD) West Point Treatment Plant in Discovery Park, Seattle, and the City of Edmonds Wastewater Treatment Plant. Wastewater from the Highlands Sewer District is conveyed to RWD facilities (City of Shoreline, 2005b). Two RWD customers currently operate septic systems in the Richmond Beach Neighborhood; however, none of the properties fall within the City's shoreline planning area (Newman, personal communication, 2003).

Four RWD lift stations are located within the Puget Sound shoreline planning area. The King County Richmond Beach Pump Station is located in Segment B (King County, 2007). King County maintains a 30-inch diameter emergency overflow outfall pipe associated with the pump station. The outfall pipe is located in Segment B. King County also maintains an emergency overflow outfall pipe in Segment E. The pipe is associated with the Hidden Lake Pump Station located outside of shoreline planning area near Boeing Creek Shoreline Park (see Map 10 in Appendix C).

Upon the City's incorporation in 1995, the City of Shoreline inherited and assumed jurisdiction over the storm and surface water management system located in the roadways within the city limits. As of 1998, facilities located outside the roadways are under the City of Shoreline jurisdiction as well. Stormwater utilities generally consist of a mix of open ditches and channels, pipes, vaults and open retention/detention facilities.

Historical/Cultural Resources

Historic and cultural resources are documented through a variety of sources. Official registers include the National Register of Historic Places and the Washington State Heritage Register. In 1995, the City of Shoreline adopted Chapter 15.20 of the municipal code (Landmark Preservation) to provide for the designation, preservation, protection, enhancement, and perpetuation of designated historic resources within the boundaries of the City. The Landmark Preservation chapter adopts by reference several sections of the King County Code Chapter 20.62 (Protection and Preservation of Landmarks, Landmark Sites and Districts). None of the properties designated as landmarks in the City of Shoreline are located within the shoreline planning area (see Map 13 in Appendix C).

The Historical/Cultural Element of the 1998 Shoreline Master Program provides general goals and policies to ensure important archaeological, historical, and cultural sites located within the shoreline jurisdiction are identified, protected, preserved, and restored for educational and scientific purposes. It also aims to adopt standards that ensure the protection and preservation of historic and cultural sites (City of Shoreline, 1998b). Historic preservation is also addressed in the Community Design Element of the 2005 Shoreline *Comprehensive Plan*.

In 1996, the King County Historic Preservation Program conducted an inventory of historic resources in the City of Shoreline. It did not include an inventory of archaeological sites, traditional cultural properties, or historic landscapes. However, an analysis of documented research revealed Native American peoples traveled along the Puget Sound shoreline and stream drainages to collect resources such as tobacco at Richmond Beach. No buildings directly associated with railroad development in Richmond Beach, lumber production, agricultural production, or the interurban railroad remain today (Copass, 1996).

In 2001, Larson Anthropological Archaeological Services (LAAS) conducted a study of six potential wastewater treatment plant sites in Snohomish County as part of King County's Brightwater Treatment Plant project. The inventory included the Point Wells site. No archaeological sites or historic structures are recorded within 0.25 miles from the Point Wells industrial site. However, LAAS determined Point Wells has a high probability for hunter-fisher-gatherer archaeological resources based on the existence of a former sandspit and lagoon buried in fill in the western half of Point Wells beneath the steep bluffs along the shoreline. Further archaeological investigation is recommended to determine if archaeological deposits associated with the former sandspit and lagoon exist beneath fill (LAAS, 2001).

Sound Transit performed an inventory of historic, cultural, and archaeological resources along the commuter route between Seattle and Everett in a Final Environmental Impact Statement (EIS) for the Commuter Rail Project (1999). The inventory was based on existing documents, coordination, including contact with Native American tribal organizations, and the National Register of Historic Places. At the time the EIS was written, Sound Transit was considering developing a station near the City of Shoreline. Two station alternatives were considered in the EIS, Point Wells and Richmond Beach Saltwater Park. Sound Transit determined that no known historic, cultural, or archaeological resources areas were listed in, or eligible for, the National Register. While construction work at these two areas could affect undiscovered prehistoric or historic archaeological deposits, native soils have been previously disturbed; suggesting questionable integrity of any archaeological remains (Sound Transit, 1999a).

Site Contamination

According to Department of Ecology's Facility Site database, there is one known contaminated site in the shoreline planning area (Ecology website, 2008). The Point Wells site is listed on the Department of Ecology's Suspected and Confirmed Contaminated Sites List for soil, groundwater and surface water contamination associated with previous petroleum production. In 1999, documentation prepared for the King County Brightwater Treatment Plant examined potential soil and groundwater contamination at several sites under consideration at that time for a treatment facility, including Point Wells. When the Brightwater document was prepared, the long-term soil and groundwater remediation plans by Chevron, the property owner at that time, were unknown (CH2MHill and Associated Firms, 2001). However, as part of the Brightwater Treatment Plant conveyance project, a portion of Point Wells is undergoing a voluntary cleanup program with Ecology for suspected and confirmed soil and groundwater contamination.

NEARSHORE PHYSICAL CHARACTERIZATION

Nearshore Processes

The Puget Sound nearshore is defined as the area of marine and estuarine shoreline extending from the top of shoreline bluffs to the depth offshore where light penetrates the water thereby supporting plant growth (King County Department of Natural Resources and Parks [KCDNRP], 2001). The nearshore also includes estuaries and tidal rivers to the head of tidal influence. Landforms found in the Puget Sound nearshore environment include bluffs, beaches, mudflats, kelp and eelgrass beds, salt marshes, spits, and estuaries.

The processes occurring within the Puget Sound nearshore area are critical for maintaining habitats and health of the nearshore shoreline environment. Changes in the physical processes within the nearshore can negatively affect habitats by limiting food and nutrient sources for marine life, deteriorating beach sediment movement, accelerating erosion, and altering the flows of surface and groundwater. Nearshore processes are those actions which occur as a result of wind, tidal influence, waves, and surface and groundwater flow that result in sediment movement and affect habitat formation.

The City of Shoreline beaches are typical of Puget Sound and can be characterized by two distinct foreshore components: a high-tide beach and a low-tide terrace (Downing, 1983). The high-tide beach consists of a relatively steep beachface with coarse sediment and an abrupt break in slope at its waterward extent. Low wave energy beaches, such as those along the City's shoreline, have a high-tide beach composed of poorly sorted sediment, with intermittent intertidal vegetation and a relatively narrow backshore. Extending seaward from the break in slope, the low-tide terrace typically consists of a gently sloping accumulation of poorly sorted fine-grained sediment (Komar, 1976; Keuler, 1979). Considerable amounts of sand in a mixed sand and gravel beach are typically winnowed from the high-tide beach by waves and deposited on the low-tide terrace (Chu, 1985). The amount and composition of beach sediment generally follows a seasonal cycle. Under normal seasonal weather patterns, the stronger, wind-driven waves that occur in winter remove material from the beachface, while more gentle, summer wind-driven waves move sediment back onshore (Masselink and Hughes, 2003).

Puget Sound beach morphology and composition is dependent upon three main influences; wave energy, sediment sources, and relative position of the beach within a littoral cell. Wave energy is controlled by fetch; the open water over which winds blow without any interference from land. Wind-generated wave action gradually erodes beaches and the toe of coastal bluffs, leading to landslides. These coastal bluffs are the primary source of sediment for most Puget Sound beaches. In the City, coastal bluffs are separated from the shoreline by the BNSF railroad, thus completely removing bluff sediment sources. Fluvial sources of sediment are typically of only local significance in comparison to bluff sediment sources, which reportedly account for roughly 90% of beach material (Keuler 1988, Downing, 1983). Bluff composition and wave energy influence the composition of beach sediment. Waves sort coarse and fine sediment and large waves can transport cobbles that small waves cannot.

Wind-generated waves typically approach the shore at an angle, creating beach drift and longshore currents and transporting sediment by a process called littoral drift. Net shore-drift refers to the long-term, net result of littoral drift. Net shore-drift cells represent a sediment transport sector from source to deposition along a portion of coast. Each drift cell acts as a system consisting of three components: a sediment source (erosive feature) and origin of a drift cell; a transport zone where materials are moved alongshore by wave action with minimal sediment input; and an area of deposition (accretion area) that acts as the drift cell terminus (Jacobson and Schwartz, 1981). Deposition of sediment occurs where wave energy is no longer sufficient to transport the sediment in the drift cell. Drift cells in the Puget Sound region range in length from 46 feet to just under 19 miles, with the average drift cell just under 1.5 miles long (Schwartz, 1991).The Washington Coastal Atlas (Ecology website, 2008) maps net-shore drift direction, or the prominent drift direction, including divergence zones and areas of "no appreciable drift" (which include highly modified, protected harbor shorelines). Based on the wave regime, extensive fetch, and coastal geomorphology the net drift direction of all the shoreline planning segments is south to north (Schwartz, 1991). Divergence zones are present at the north end of Point Wells and south of the City boundary in the City of Seattle, but the City's shoreline is within a single drift cell.

The Washington Department of Natural Resources (WDNR) ShoreZone Inventory (2001) documents shoreline sediment stability as stable, erosional, or accretional, and sediment sources as fluvial, alongshore, and backshore (see Table 3). The City's shoreline is homogeneous in terms of the sediment stability and source because of the BNSF railroad. The railroad results in a stable sediment characterization throughout the shoreline, with the exception of the shoreline adjacent to Innis Arden Reserve. Construction of the railroad buried much of upper foreshore beach, thereby locking up coarse sand and gravel in the littoral system. This limits or precludes longshore transport of sediment. Sediment sources in the City are limited and are characterized by the ShoreZone data as alongshore with the exception of some fluvial sediment released from Boeing Creek. As discussed previously, the railroad interrupts historic sediment supply from eroding bluffs.

The width of intertidal beach in the City's shoreline is also relatively constant throughout the shoreline length, averaging 20 to 40 feet wide. The exception is within Segment B where some wider intertidal beaches are present near residential development along the shoreline. Additional details of ShoreZone data are contained in Appendix A. Table A-1 includes more detailed information within each of the planning segments. Map 2 in Appendix A depicts the individual ShoreZone segments.

Table 3. Shoreline Sediment Sources and Mobility

Shoreline Segment	Approximate Intertidal Width	Estimated Sediment Source	Sediment Stability	Net shore Drift Direction
A	20 - 37 feet	Alongshore (all of segment)	Stable	North
B	30 - 105 feet	Alongshore (all of segment)	Stable	North
C	27 - 36 feet	Alongshore (all of segment)	Stable	North
D	36 feet	Alongshore (all of segment)	Stable	North
E	21 - 46 feet	Alongshore (most of segment); Fluvial in relation to Boeing Creek	Stable (most of segment); Erosional from north end of segment (646.7 feet to south)	North

Source: WDNR, 2001; Schwartz, 1991.

Johannessen et al. (2005) inventoried current and historic shoreline erosion and accretion areas in the City of Shoreline. Drift cell "SN-3" generally corresponds with the shoreline within the City, beginning 1.5 miles south of Boeing Creek and extending north to Point Wells. Historically, this drift cell was comprised of 45% feeder bluff, 18% feeder bluff exceptional, and an additional 4% as potential feeder bluff. The remaining 67% of the shoreline was comprised of four scattered accretion areas. These accretion areas were characterized by delta lagoons, longshore lagoons and stream mouths. Along the Point

Wells shoreline, before it was developed as an industrial site, there was a longshore lagoon that connected to a larger delta lagoon to the north.

The construction of the BNSF railroad separated historic coastal feeder bluffs from the shoreline, resulting in a 100% loss of sediment sources (Johannessen et al., 2005). The City's shoreline now consists of nine separate accretion shoreforms interrupted by railroad and residential modifications (Johannessen et al., 2005). No active feeder bluffs are currently present. Sixty-seven percent (67%) of the shoreline is classified as modified due to the railroad with the remainder (29%) classified as accretion shoreforms. From the north end of the City south to Richmond Beach (Segment B) there is a broad accretion shoreform, which corresponds with the slightly wider intertidal width shown earlier in Table 3. Table 4 is a summary of the information included in Johannessen et al. (2005).

Table 4. Current and Historic Beach Feeding Sources/Erosion and Accretion Areas in City of Shoreline (Drift Cell SN-3)

	Feeder Bluff (%)	Feeder Bluff Exceptional (%)	Potential Feeder Bluff (%)	Not Feeder Bluff (%)	Accretion Shore forms (%)	Modified (%)
Historic conditions	45%	18	4	5	18%	11%
Current Conditions	0%	0%	0%	0%	29%	71%
Change	-45%	-18%	-4%	-5%	+11%	+61 %

Source: Johannessen et al. 2005

Geologic Units

Geologic information was collected from two sources: the Tetra Tech/KCM Geology (Geographic Information Systems [GIS]) data used in basin characterization reports (2004a and 2004d) and King County/Booth Surficial Geology Mapping (2005). These two sources characterize the geology of the shoreline planning area as containing till, beach deposits, advance outwash deposits, transitional beds, recessional outwash deposits, possession drift, landslide, and Whidbey formations.

The City is located at the western edge of the Seattle drift plain, an irregular plateau that drops toward Puget Sound (TT/KCM, 2004a and 2004d). The glacial retreat left behind layers of silt/clay, till, and gravel. Steep bluffs are characteristic in shoreline planning Segment E (Highlands/Boeing Creek) and begin to diminish in a northerly direction through shoreline Segments D and C.

Soils

The Soil Survey for King County (United States Department of Agriculture, Soil Conservation Service [USDA SCS], 1973) does not include the City of Shoreline. The

Soil Survey for Snohomish County (USDA Natural Resources Conservation Service [NRCS], 1983) maps Point Wells (Segment A) as "Urban Land." Soil information from a 1952 survey by the US SCS was reviewed for soil type by basin (TT/KCM, 2004a and 2004d). The survey indicates that the predominant soil type in the Middle Puget Sound South Basin is Everett gravelly sandy loam (75 percent) with the remainder being Alderwood gravelly sandy loam. The majority of the Boeing Creek Basin is Alderwood gravelly sandy loam. The predominant soil type in the Middle Puget Sound North Basin is split between the two major soil types already mentioned. The rest of the soils represent less than four percent of the total area in the City, including Carbondale muck, coastal beach and Norma fine sandy loam.

The Geotechnical Assessment Report prepared for the Sound Transit Everett to Seattle Commuter Rail Project (HWA GeoSciences, Inc., 1998) describes the typical soils and slope profile found along the waterfront from Everett to Seattle. In general, the area is dominated by Pleistocene aged glacial soils associated with the Vashon Drift and consisting of recessional outwash deposits, glacial till, advance outwash and glacial lacustrine. Recent soil deposits include beach and colluvial deposits, some of which are associated with landslides. Where major landscape modifications have occurred, such as Point Wells, fill soils are typically present (HWA GeoSciences, Inc., 1998).

The waterfront bluffs found along the City's shoreline (Segments B through E) are typically composed of a cap of very dense gravelly sand with scattered cobbles and boulders in a clay/silt matrix (glacial till), overlaying dense sand and gravel (glacial advance outwash), which overlies hard clay (glacial lacustrine). The thicknesses of these layers can vary substantially. However, the till cap is generally at the top of the bluffs, sometimes overlain by deposits of medium dense sand and gravel (glacial recessional outwash). The hard clays are typically at or near sea level. Streams draining the uplands dissect bluffs and flow into Puget Sound, depositing fine sand and silt in alluvial fans. Littoral drift, which is the accumulation or movement of foreshore sediments along the shore by littoral currents and oblique waves, reworks some of this material and becomes beach deposits (HWA GeoSciences, Inc., 1998).

Seismic Hazard Areas

Seismic hazard areas are defined in Chapter 20.80.220 of the SMC as "lands that, due to a combination of soil and ground water conditions, are subject to severe risk of ground shaking, subsidence or liquefaction of soils during earthquakes. These areas are typically underlain by soft or loose saturated soils (such as alluvium) and have a shallow ground water table."

There are mapped liquefaction susceptibility areas along Segments A, B, C, D and a portion of E. All are mapped as having high liquefaction susceptibility (City of Shoreline, 2002).

Landslide Hazard Areas

The west-facing slopes along Puget Sound within the City have experienced recent and historical landslide activity. The contact zone between the hard clay layer and the

overlying sand layer is the source of many landslides along the coast of Puget Sound, which commonly occur after major storm events. In general, slope stability in the City's shoreline planning area is more stable in the northern portion, though containing some isolated unstable areas, and unstable in the southern portion (Segment E).
Baum et al. (2000) conducted an inventory of recent landslides that included the City of Shoreline. Significant storm events during 1996 and 1997 resulted in several major landslide episodes. The most common types of landslides were shallow earth slides and debris flows, some of which blocked culverts and overtopped the BNSF railroad track (locations are shown on Map 7). These landslides range in volume from 300 cubic yards to 40,000 cubic yards. The largest one occurred in Segment E north of Highlands Creek (Baum et al. 2000).

The seawall and stone revetments of the BNSF railroad protect the base of the bluff from wave erosion and have probably increased the stability of the bluff. Baum et al. (2000) suggests that the bluff retreat during the winters of 1995-96 and 1996-97 might have been greater had the seawall and embankment not been present.

In the City, regulated landslide hazard areas are classified in SMC Chapter 20.80.220. Hazard areas are based on percent slope, soil composition, and the presence of emergent water. Three categories are used and defined as:
Moderate Hazard: Areas with slopes between 15 percent and 40 percent and that are underlain by soils that consist largely of sand, gravel or glacial till.
High Hazard: Areas with slopes between 15 percent and 40 percent that are underlain by soils consisting largely of silt and clay.
Very High Hazard: Areas with slopes steeper than 15 percent with zones of emergent water (e.g., springs or ground water seepage), areas of landslide deposits regardless of slope, and all steep slope hazard areas sloping 40 percent or steeper."

No landslide hazard areas are identified in Segment A (Point Wells). The extreme north and south portions of Segments B and C contain landslide hazard areas in the extreme north and south portions of both segments. Landslide hazard areas exist throughout all of Segments D and E (King County iMAP, 1991). See Map 7 in Appendix C for landslide hazard area locations.

Erosion and Sedimentation Hazard Areas

Erosion hazard areas are defined in Chapter 20.80.220 of the SMC as "lands or areas underlain by soils identified by the U.S. Department of Agriculture Natural Resources Conservation Service (formerly the Soil Conservation Service) as having 'severe' or 'very severe' erosion hazards. This includes, but is not limited to, the following group of soils when they occur on slopes of 15 percent or greater: Alderwood-Kitsap (AkF), Alderwood gravelly sandy loam (AgD), Kitsap silt loam (KpD), Everett (EvD) and Indianola (InD)."

No erosion hazards currently exist within the City's shoreline planning area; however, erosion hazard areas are identified east of Segment E primarily in the upper Boeing Creek Basin (see Map 7 in Appendix C) (City of Shoreline, 2002).

Aquifer Recharge Areas

Within the City of Shoreline, including the Puget Sound shoreline planning area, there are no known critical aquifer recharge areas that supply potable water. Almost all the City's potable water comes from surface sources originating in the Cascade Mountains and is either operated by the Shoreline Water District or the City of Seattle. The City's lakes and wetlands may contribute to aquifer recharge (City of Shoreline, 2005a).

Streams

Streams provide valuable wildlife corridors, a source of fluvial sediments to the marine shoreline (moved along the shoreline by currents), and support a range of fish species. The City of Shoreline is located in Water Resource Inventory Area (WRIA) 8, the Cedar-Sammamish Watershed. Information on stream conditions was drawn in particular from the following documents: *City of Shoreline Surface Water Master Plan* (City of Shoreline, 2005b), *Salmonid Habitat Limiting Factors, Water Resource Inventory Area 8 Final Report* (Kerwin, 2001), *Boeing Creek Basin Draft Characterization Report* and *Middle Puget Sound Basin Characterization Report* (TT/KCM, 2004a, 2004d), and the *City of Shoreline Stream Inventory and Assessment* (TT/KCM, 2004b). Streams are depicted on Map 4 and Map 10 in Appendix C. A total of seven streams have been identified to flow into the Puget Sound within the PAA and the City limits. In general, the western portion of the City ultimately drains to Puget Sound through the following streams: 1) Lost Creek, 2) Barnacle Creek, 3) Storm Creek, 4) Blue Heron Creek, 5) Coyote Creek, 6) Boeing Creek, and 7) Highlands Creek.

Segment A has an unnamed tributary of Barnacle Creek that is located east of the BNSF railroad and south of Point Wells. It travels south where it connects to Barnacle Creek in Segment B. Lost Creek is located north of the city limits in the Town of Woodway. It flows southwest both in piped and open water sections towards Puget Sound. It appears to connect to Barnacle Creek before discharging into Puget Sound in Segment B. Barnacle Creek is formed by the confluence of Upper Barnacle Creek and Lower Barnacle Creek and discharges to Puget Sound in Segment B. The stream includes piped and open water sections along the BNSF railroad and flows through a wetland area downstream of Richmond Beach Drive NW (see Photo B-2 in Appendix B). The creek has three outlets to Puget Sound (including one near Lost Creek) via culverts beneath the BNSF railroad. The lower section of Barnacle Creek is tidally influenced upstream for a distance of about 20 feet (Photo B-6 in Appendix B). A stream evaluation letter was submitted to the City as part of a development permit for a residential property located near the intersection of Richmond Beach Drive NW and NW 196th Street. According to the letter, the portion of Barnacle Creek from NW 196th Street south to where it discharges to the Puget Sound may not meet the City's definition of a stream per SMC 20.80 (Critical Areas) (The Watershed Company, 2008). However, the findings of the letter were not verified by WDFW. Furthermore, WDFW has indicated to the City that they will defer to the City's stream inventory (see *City of Shoreline Stream Inventory and Assessment*) even when presented with a more recent report which concludes that a stream does not qualify as a stream per the City's regulations (Nammi, 2009).

Storm Creek, which begins upstream of NW 195th Street and includes several unnamed tributaries, is located at the very south end of Segment C. South of NW 191st Street, Storm Creek continues southwest for 3,000 feet through the privately owned Eagle Reserve in Innis Arden before entering Puget Sound. The stream is confined within a very steep ravine between the mouth and 17th Place NW. Severe erosion occurs in the lower sections of Storm Creek through the Eagle Reserve (Photo D-3 in Appendix B). Bank hardening and several weirs have been constructed to protect private property, a pump station, and a sewer line crossing Storm Creek (City of Shoreline, 2005b).

Blue Heron Creek and Coyote Creek discharge to Puget Sound (Photo D-1 in Appendix B) and are located within Segment D and E respectively. Blue Heron Creek begins as two tributaries that join near NW 185th Street. Much of the stream flows through the private Blue Heron Reserve. Coyote Creek begins as three or more branches that extend into ravines with relatively steep side slopes. These branches come together on private property near NW 175th Street. Below the confluence of these branches, the creek flows another 1,700 feet before entering Puget Sound. The lower portion of the creek flows through a private tract called the Coyote Reserve and through Innis Arden Reserve. In comparison, Blue Heron Creek drains a larger area than Coyote Creek and experiences larger flows.

Boeing Creek and Highlands Creek discharge to Puget Sound and are located within Segment E. There are also several short unnamed tributaries that occur within the Innis Arden Reserve and flow to Puget Sound (see Map 4). Boeing Creek begins as two large tributaries that are mostly contained within pipes and occur in developed commercial areas. From the confluence of the two tributaries, the main stem descends through forested ravines to Hidden Lake, a small, constructed lake that the City regulates as a storm detention facility. Downstream from Hidden Lake, the stream has steep gradients and incised channels with moderate-to severe erosion of the channel beds and banks. A steel-pile dam is present approximately 2,300 feet from the mouth, which acts as a barrier to upstream fish. Many sections below the dam have experienced slope failure, and the substrate is generally embedded having been filled in with sediment, providing poor spawning habitat for salmonids (King County 1994). Boeing Creek enters Puget Sound through a large box culvert under the BNSF railroad. The lower portion of the stream is tidally influenced at high tides.

Highlands Creek is located within the Highlands development near the southern City boundary. The stream flows west through private property and is mostly contained within a piped system. The approximate length of the watercourse is 1,200 feet, of which 850 feet is piped.

None of the streams are currently listed on the state Department of Ecology's 2004 303(d) list, which lists streams that do not meet water quality standards for one or more parameters (Ecology website, 2008). However, many small streams, such as those found within the City's shoreline planning area, may potentially be at risk for exceeding several water quality parameters.

As stated above, many of the streams discharge directly into Puget Sound through culverts. Culverts that are undersized and/or have a steep slope may increase water velocity, which may cause downstream scouring of nearshore areas during periods of significant water runoff (Parker, 2000).

Flood Hazard Areas

Flood hazard areas are defined in the Shoreline *Comprehensive Plan* as "those areas within the floodplain subject to a one percent or greater chance of flooding in any given year" (City of Shoreline, 2005a). These areas are typically identified on the Federal Emergency Management Agency (FEMA) flood insurance rate maps (FIRM) as the 100-year floodplain. The 100-year floodplain is regulated by two chapters of the SMC: Chapter 16.12, Flood Damage Prevention, and Chapter 20.80.380-410 of the CAO.

Portions of the shoreline in Segment B, C, D, and E are mapped as a 100-year floodplain on the King County FIRM series, Panels 20, 40, 310, and 330 (FEMA, 1995). Flood hazards for Segment A (Point Wells) are mapped on Snohomish County FIRM series and include panels 1294 and 1292 (FEMA, 1999). The stream corridor of Boeing Creek (Segment E) is also mapped as a 100-year floodplain (FEMA, 1995), but the stream is not large enough itself to be a shoreline of the state and only the mouth of the stream is located within the marine shoreline. The King County Sensitive Area Map Folio (King County iMAP, 1991) shows only the Boeing Creek stream corridor within Segment E as being a potential flood hazard area (see Map 4 in Appendix C). Typically, the areas south of stream mouths and the marine shoreline below the OHWM are indicated as flood hazard areas. Following the recommendations made in the Snohomish County FIRM series, Base Flood Elevation for shoreline in all Segments (A, B, C, D, and E) will be 10 feet National Geodetic Vertical Datum (NGVD).

Several existing houses are within the shoreline of Puget Sound along 27th Avenue NE in Segment B (see Map 4 in Appendix C). Most of the homes are protected by bulkheads, with the exception of those on the south end, which, based on a conversation in March 2006 between Juniper Nammi (City of Shoreline Planner) and Chuck Steele (Ecology Floodplain Specialist), were reported to have had flooding in the past (Chuck Steele, personal communication, 2008). The existing lots within the flood hazard areas along 27th Avenue NE are fully developed, therefore flood regulations in the SMC would be applied primarily to remodel and rebuilding on these sites.

Industrial facilities and a large dock associated with Point Wells exist within the shoreline of Puget Sound in Segment A. Portions of these facilities are within the mapped flood hazard area (see Map 4 in Appendix C). Flood regulations in the SMC would be applied to replacement or rebuilding of industrial facilities and to shoreline restoration projects. If the property were to be rezoned in the future, flood regulations in the SMC would be applied to platting, subdivision, and new construction on the site.

Shoreline Modifications

Three white papers prepared in recent years summarize the current knowledge and technology pertaining to marine and estuarine shoreline modifications in the Puget

Sound. These papers are: *Overwater Structures: Marine Issues* (Nightingale and Simenstad, 2001); *Marine and Estuarine Shoreline Modification Issues* (Williams and Thom, in King County Department of Natural Resources and Parks [KCDNRP], 2001); and *Beaches and Bluffs of Puget Sound* (Johannessen and MacLennan, 2007). These documents, along with *Reconnaissance Assessment of the State of the Nearshore Report: Including Vashon and Maury Islands (WRIAs 8 and 9)* (KCDNR, 2001) and the Washington Department of Natural Resources ShoreZone Inventory (2001) were summarized and incorporated into this section. A field visit in September 2003 verified modifications along portions of the shoreline providing public access. Table A-2, Appendix A contains additional information regarding shoreline modifications within the planning segments.

Shoreline modifications refer to structural alterations of the shoreline's natural bank, including levees, dikes, floodwalls, riprap, bulkheads, docks, piers or other in-water structures. Such modifications are typically used to stabilize the shoreline and prevent erosion. Shoreline armoring (i.e. riprap, bulkheads, and other shore parallel structures) is the most common type of shoreline modification. Shoreline armoring impedes sediment supply to nearshore habitats, and this sediment starvation can lead to changes in nearshore substrates from sand or mud to coarse sand, gravel, and finally hardpan. This may, in turn, decrease eelgrass and increase kelp abundance, as well as forage fish spawning habitats. Armoring also alters natural process dynamics by blocking or delaying the erosion of upland areas and bluffs that replenish the spawning substrate. Beach narrowing and lowering and decreased driftwood abundance also result from shoreline armoring (Johannessen and MacLennan, 2007).

Construction of shoreline armoring may cover or destroy eelgrass meadows, and overwater structures may deprive eelgrass of light. Dredging can excavate eelgrass or cause excessive turbidity and permanent filling of eelgrass meadows (KCDNR, 2001).

Bulkheads and piers may also affect fish life by diverting juvenile salmonids away from shallow shorelines into deeper water, thereby increasing their potential for predation (Nightingale and Simenstad, 2001). Piers also alter wave energy and current patterns and obstruct littoral drift and longshore sediment transport (Williams and Thom, 2001). Sewer outfalls introduce nutrients and pollutants to the nearshore area altering current cycles and food web interactions.

Shoreline Armoring

Approximately 97 percent of the City's shoreline adjacent to Puget Sound is modified with riprap and bulkheads (WDNR, 2001). The majority of this armoring is associated with the BNSF railroad bed (Map 12 in Appendix C). The WDNR ShoreZone Inventory (2001) indicates that approximately 23 percent of Segment A (approximately 796 feet; the southern portion of Point Wells) is unmodified beach. The remaining portion of Point Wells (approximately 2,694 feet) is highly modified with riprap and sheet pile, as well as a large barge dock. Segment B is entirely modified with riprap. A portion of Segment B (approximately 1,845 feet) is modified with concrete and wooden bulkheads along a residential area adjacent to Puget Sound (Photo B-2 in Appendix B). Approximately 73

percent of Segment C is unmodified, at Richmond Beach Saltwater Park where beach extends waterward of the railroad right-of-way. The north and south ends of Segment C are modified with riprap. All of Segments D and E (along the entire length of the City's shoreline south of Richmond Beach Saltwater Park) are modified with riprap (WDNR, 2001).

Docks, Piers, and Over-Water Structures

There are no docks, piers, or over-water structures along Puget Sound within the City limits (Segments B through E) (Map 12 in Appendix C). However, within the PAA, Point Wells (Segment A) contains a large industrial dock originally used for loading oil when the site was operated as a bulk fuel terminal (Photo A-1 in Appendix B). The dock is currently used for both import and export of materials to and from the facility.

NEARSHORE BIOLOGICAL CHARACTERIZATION

Wetlands

Wetlands near the Puget Sound shoreline typically include tidal marshes and tidally influenced estuaries. Tidal marshes may contain both salt and freshwater habitats that experience tidal inundation (KCDNR, 2001). Several wetlands have been mapped by various sources in the City's shoreline planning area. According to the 1987 National Wetlands Inventory (NWI), the entire area of the City's shoreline planning area in the City limits and UGA boundary is designated as an "estuarine intertidal aquatic bed/unconsolidated shore" (E2AB/USN) wetland (US Department of the Interior [USDI], 1987a and 1987b). The King County Sensitive Areas Map Folio (King County, 1990) also identifies intertidal wetlands encompassing all segments within the City's shoreline planning area. Although mapped as wetland at a landscape level, many of these areas in the City are unvegetated beach or mudflat and therefore would not meet the state definition of wetland as per City code requirements.

The *Stream and Wetland Inventory and Assessment* conducted by Tetra Tech/KCM in 2004 for the City documented one non-tidal wetland within Segment B within the City's shoreline planning area (Map 4 in Appendix C). This palustrine forested wetland is less than one acre in size and is associated with Barnacle Creek. Priority Habitats and Species (PHS) data indicate that a small (less than one acre) scrub/shrub wetland is located at the northernmost extent of Segment E and is associated with Coyote Creek within the shoreline planning area (WDFW, 2008).

Critical Fish and Wildlife Areas

Critical fish and wildlife habitat areas are those areas identified as being of critical importance in the maintenance and preservation of fish, wildlife and natural vegetation. Critical fish and wildlife habitat areas are defined in SMC Chapter 20.80.260 as follows: Fish and wildlife habitat conservation areas include nesting and breeding grounds for State and Federal threatened, endangered or priority species as identified by the Washington State Department of Fish and Wildlife, including corridors which connect priority habitat, and those areas which provide habitat for species of local significance which have been or may be identified in the City of Shoreline Comprehensive Plan.

Critical fish and wildlife habitats in the City's shoreline planning area are characterized in the following sections.

Marine Riparian Zones

Marine riparian vegetation is defined as vegetation overhanging the intertidal zone (KCDNR, 2001). Marine riparian zones function by protecting water quality; providing wildlife habitat; regulating microclimate; providing shade, nutrient and prey; stabilizing banks; and providing large woody debris (Anchor Environmental and People for Puget Sound, 2002).

The existing railroad bed, land clearing, and shoreline armoring have impacted the marine riparian zones of all the City's shoreline segments. Marine riparian zones are not located within any of the shoreline planning segments (WDNR, 2001) (Table A-3 in Appendix A). The only marine riparian vegetation that occurs west of the BNSF railroad is located at Richmond Beach Saltwater Park (see Photo C-2 in Appendix B).

Banks and Bluffs

Banks and bluffs are part of the marine riparian zone and can be a source of sediment to adjacent beaches, providing habitat to bluff-dwelling animals, rooting area for riparian vegetation, and a source of groundwater seepage to marine waters (KCDNR, 2001). Shoreline development and armoring, vegetation clearing, and changes in hydrology, among others, can adversely impact the natural functions of bluffs.

The ShoreZone Inventory (WDNR, 2001) maps moderate height, inclined cliffs composed of fines/mud and sand in Segments B and C (Tables A-4 in Appendix A). These are described as erosional features, providing sediments to the beach.

Beaches and Backshore

Beaches are composed of generally loose, unconsolidated sediment that extends landward from the low water line (Johannessen and MacLennan, 2007). Backshore areas are immediately landward of beaches and are zones inundated by storm-driven tides. Beaches and backshores provide habitat for numerous organisms, including cutthroat trout, piscivorous birds (grebes, herons, and mergansers), and shorebirds (Dethier, 1990). A typical profile of an undisturbed shoreline in Central Puget Sound would include an upper backshore or storm berm area that collects logs, algae, and other debris during storms (Photo B-3 in Appendix B). The intertidal portion of the beach is typically relatively steep and composed of a mixture of cobbles and gravel in a sand matrix (KCDNR, 2001).

Sediment abundance throughout the shoreline segments is characterized predominantly as "moderate" (some mobile sediment, but not likely to rapidly move) (Table A-1 in Appendix A). Erosional areas are described in Segment E. Beach sediments in shoreline planning area are characterized in Table A-1 and A-4 in Appendix A.

The WDNR ShoreZone Inventory utilized the British Columbia ShoreZone Mapping System, which classifies the shoreline into homogeneous stretches (or units) based on key

physical controlling factors (WDNR, 2001). Table 5 summarizes the general beach or shoreline substrate composition, based on the British Columbia classification, for each shoreline planning segment (WDNR, 2001).

Table 5. ShoreZone Classification by Segment (WDNR, 2001)

Shoreline Segment	British Columbia Classification*
A	• Sand beach • Sand and gravel flat or fan
B	• Sand beach • Sand flat • Sand and gravel flat or fan
C	• Sand beach • Sand and gravel beach, narrow
D	• Sand beach
E	• Sand and gravel beach, narrow • Sand flat

*British Columbia Physical Mapping System (Howes et al., 1994 *in* WDNR, 2001)

Sobocinski (2003) conducted a comparative survey of beach fauna found on natural and altered beaches (i.e. where shoreline armoring was present) located above the mean high tide level. One of the four survey sites was located at Richmond Beach Saltwater Park. The study looked at vegetative wrack and invertebrate assemblages, among several other parameters. Vegetative wrack is comprised of natural organic marine material cast on the shore deposited during an ebbing or receding tide. Not surprisingly, the percent cover of wrack was greater at natural beach stretches than at altered beaches at all sites. Wrack serves as important habitat for many beach-dwelling fauna. Fauna found along altered beaches were dominated by marine organisms, such as crustaceans, and contained less insects, talitrids and collembolans (organisms that are terrestrial-dependent) than the neighboring natural beach. The study suggests that a shift to more marine organisms is the result of lowering the land/sea interface and replacing sandy sediments with hard substrate. In addition, the removal of shoreline vegetation, which often accompanies shoreline armoring, also changes the physical structure of this zone by creating hotter, drier habitats, and removing vegetation-dependent organisms, such as insects and invertebrates which inhabit the intertidal zone (Sobocinski, 2003).

Flats

Flats generally include gently sloping sandy or muddy intertidal or shallow subtidal areas (KCDNR, 2001), and are used by juvenile salmonids, shorebirds, and shellfish, among other species. Flats are generally located at the mouths of streams where sediment transported downstream is deposited, and in areas of low wave and current energy where longshore waves and currents deposit sediment (Photo B-4 in Appendix B) (KCDNR, 2001). Sand flats are mapped in Segment B and much of Segment E (in the vicinity of

the Barnacle and Boeing Creek outlets). Sand and gravel flats are mapped in Segments A and B. No mud flats are present in the City's shoreline.

Shoreline activities that may impact tidal flats (KCDNR, 2001) include:
Unnatural erosion or deposition of sediment;
Harvesting of shellfish and other marine life;
Fecal and chemical contamination;
Physical disturbances from shoreline armoring, marina construction, and upland development practices;
Shading from overwater structures; and
Loss of emergent and riparian vegetation.

Eelgrass Meadows

Eelgrass is a perennial, marine aquatic vascular plant that is rooted in the substrate and can spread horizontally to produce new plants. Eelgrass requires fine-grained substrates and is particularly associated with low to moderate high-energy intertidal and shallow subtidal mud/sand substrates. The plants need sufficient light during summer to support growth and for nutrient storage over winter. Typically, eelgrass beds form between about two meters above mean lower low water (MLLW) to almost nine meters below MLLW depending on water quality. However, other factors such as extreme low or high nutrient levels, substrate composition, presence of other species, and toxic pollutants can affect eelgrass abundance and distribution.

The importance of eelgrass has been described in various sources, including the *Reconnaissance Assessment of the State of the Nearshore Environment* (KCDNR, 2001) and more recently in *Kelp and Eelgrass in Puget Sound* (Mumford, 2007). Eelgrass plants are important primary producers, fixing carbon that enters nearshore food webs and generating nutrients and substrate that form the base of the food chain. Eelgrass meadows provide refuge and foraging habitat for many salmonid species, other fish, invertebrates, birds and aquatic organisms.

Eelgrass beds have been documented in Puget Sound in the City's shoreline planning area including Point Wells (Woodruff et al., 2001 and WDNR, 2001). The occurrence of eelgrass is most dense in Segments D and E, north and south of the mouth of Boeing Creek (Table A-5, Appendix A).
Shoreline activities that may impact eelgrass (KCDNR, 2001) include:
Clam harvesting and other direct alteration by humans;
Propeller scour and wash;
Physical disturbances from shoreline armoring;
Shading from overwater structures; and
Physical disturbances from dredging and filling.

Kelp Forests

There are 23 species of kelp in Puget Sound, with only two species of floating kelp and 21 that are considered prostrate, or not-floating. The prostrate species are limited to shallower portions of the nearshore zone and comprise the majority of marine vegetation biomass in some areas (Mumford, 2007). Kelps are held to the substrate by holdfasts,

which unlike roots do not penetrate the bottom or carry nutrients. Unlike eelgrass, kelps are not rooted and must obtain nutrients directly from the water and require a hard substrate. They favor areas with high ambient light and low temperatures, which result in nutrient-rich waters, and moderate wave energy to circulate the nutrients.

Kelp provides habitat for many fish species, including rockfish and salmonids, potential spawning substrate for herring, and buffers shorelines from waves and currents, among other functions (KCDNR, 2001). A change in kelp distribution may indicate the coarsening of shallow subtidal sediments (such as that caused by erosion related to a seawall) or an increase in nutrient loading (such as from sewage effluent).

Kelp is found in all shoreline planning segments with the exception of Segment D. Kelp beds are sporadic throughout and limited in their lateral extent (Table A-5 in Appendix A) (Woodruff et al., 2001; KCDNR, 2001).

Shoreline activities that may impact kelp densities (KCDNR, 2001) include:
Physical disturbances from shoreline armoring, marina construction, and harvesting;
Shading from overwater structures;
Beach nourishment; and
Nutrient loading.

Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) maintain priority habitat and species information for Washington State, including the status of species as threatened or endangered. The City of Shoreline occurs within the WDFW Region 4. Priority habitats within Region 4 include consolidated marine/estuarine shorelines, cliffs, caves, snags, riparian areas, old-growth/mature forests, and urban open spaces. These habitats may contain up to 13 species of invertebrates, 62 species of vertebrates, and 20 species of mammals (City of Shoreline, 1998a). The following sections discuss some of the priority species and species of local importance that occur within the City's shoreline planning area.

Shellfish

Geoduck clams are documented in subtidal areas adjacent to shoreline Segments A, B, C, and E and Dungeness crabs are also documented in subtidal areas adjacent to Segment E (WDFW, 2008). The King County 1996/1997 Beach Assessment (KCDNR Website, 2003) performed at Point Wells Beach in Segment A and Richmond Beach Park in Segment C documented shellfish use of these beach areas. Assessments of the Point Wells shoreline (Segment A) resulted in the identification of 31 species of invertebrates, including littleneck, butter, horse, and sand clams; purple shore crabs, pygmy rock crabs, red rock crabs, and graceful crabs; California green shrimp, and hairy hermit crabs (KCDNR, 2003). Littleneck and butter clams dominated the clam populations by number and biomass. Assessments of the Richmond Beach Park shoreline (Segment C) resulted in the identification of 37 species of invertebrates including cockle, softshell, horse, and bay mussels; black-clawed crab, graceful decorator crab, and red rock crab. Horse clams were the dominant species of clams at Richmond Beach Park.

The Washington State Department of Health has closed Richmond Beach in Segment C to recreational shellfish harvesting (Washington State Department of Health Website, 2008) due to the presence of biotoxins. None of the City's shoreline is currently used for commercial shellfish harvesting.

Salmonids

The *Salmonid Habitat Limiting Factors: Water Resources Inventory Area (WRIA) 8 Final Report* (Kerwin, 2001) identifies the known presence of salmon in local streams. Boeing Creek (Segment E) has documented salmonid use including Chinook (listed as threatened under the ESA), coho (Federal species of concern), chum salmon, searun cutthroat trout, and resident cutthroat trout. It is likely that many of the fish are products of the "Fish in the Classroom" program (Daley, 2004). Coho are listed by the WRIA 8 as occurring in Boeing Creek. Highlands Creek contains no salmonids. All other streams are likely to contain resident cutthroat trout in some portions of the stream (TT/KCM 2004b, and Daley, 2003).

The City of Shoreline Stream Inventory (TT/KCM, 2004b) notes that the flume under the BNSF railroad in the lowest reach of Boeing Creek likely prevents fish passage seasonally during low flows. The primary detriment to habitat quality in this reach is the significant amount of sediment from landslides in the ravine. The sediment fills in pools within the stream, clogging gravels with sand and/or silt thus reducing spawning suitability.

Nearshore habitat is an important environment for juvenile salmonids, where the shallow water depth obstructs the presence of larger, predator species (Kerwin, 2001). Juvenile salmon rely on the nearshore and estuarine marine habitats for food, migration corridors, protection from predators, and a transitional environment that supports the physiological changes that occur as they transition from a freshwater to a marine environment (Fresh, 2006). Spawn and migration timing, and the use of different marine habitats vary widely between salmonid species as well as stocks or subpopulations of the same species.

All shoreline segments within the City's shoreline planning area are known or expected to contain juvenile salmonids including bull trout (federally listed), Chinook, chum, coho, cutthroat, pink, sockeye, based on the knowledge of species life histories (KCDNR, 2001).

Forage Fish

Forage fish are key components of the marine food web and have important commercial and recreational value. They are generally characterized as small, schooling fish that prey upon zooplankton and are in turn preyed upon by larger predatory fish, birds and marine mammals (Penttila, 2007). The five forage fish species most likely to occur in the City's shoreline planning area include surf smelt, sand lance, Pacific herring, longfin smelt, and eulachon (Kerwin, 2001 and King County DNR, 2001). Different species utilize different parts of the intertidal and subtidal zones, with sand lance and surf smelt spawning primarily in the substrate of the upper intertidal zone, and Pacific herring spawning primarily on intertidal or subtidal vegetation (Lemberg et al., 1997; Penttila,

2007). Water quality and other conditions that affect food or predator abundance are important for all species of forage fish.

Four primary sources were referenced in compiling information on potential forage fish spawning areas within the City's shoreline planning area: Marine Resource Species (MRS) data maintained by WDFW (2008), the *Water Resources Inventory Area (WRIA) 8 Final Report* (Kerwin, 2001), the *City of Shoreline, Fish Utilization in the City of Shoreline Streams* (Daley, 2003), and the *Reconnaissance Assessment of the State of the Nearshore Environment* (KCDNR, 2001). Information on the five potential forage fish species within the City's planning area is summarized in Table 6.

Table 6. Forage Fish Species and Presence by Shoreline Segment

Species	Documented Presence	Spawning Timing	Preferred Spawning Substrate	Spawning Location
Pacific herring	None (nearest is Quartermaster Harbor on Vashon Island)	Quartermaster Harbor stock spawn February/March	Eelgrass	Upper high tide limits to depths of 40 feet (typically between 0 and –10 tidal elevation)
Sand lance	Segments A and B	November 1 to February 15	Fine sand, mixed sand and gravel, or gravel up to 3cm	From + 5 tidal elevation to higher high water line (from bays and inlets to current- swept
Eulachon	None	Late winter/earl y spring	Unknown	Freshwater streams
Longfin smelt	None	Winter	Sand with aquatic	Freshwater streams
Surf smelt	Segments A and C	South Puget Sound stocks are fall-winter spawners (September to March)	Mix of coarse sand and fine gravel	Upper intertidal

Sources: (Kerwin, 2001; O'Toole, 1995; KCDNR, 2001; Lemberg et al., 1997)

Information on documented spawning activity was available from the WDFW (2008). No Pacific herring, sand lance, surf smelt, spawning areas are currently documented in any of the shoreline inventory segments (WDFW, 2008). However, it is fair to assume

that they all utilize the nearshore areas for feeding and migration. Both King County DNR (2001) and Kerwin (2001) document surf smelt spawning areas in Segment C, along Richmond Beach Park (Photo C-2 in Appendix B). A sand lance spawning area is mapped along the shoreline within the City of Shoreline, in the southern portion of Segment A (Photo A-1 in Appendix B) (Kerwin, 2001) and just north of Barnacle Creek in Segment B (KCDNR, 2001). Both sources cite the documented presence of surf smelt in planning Segment A (Point Wells). In addition, the mouth of Boeing Creek (Segment E) has been identified as an important area for the feeding, migration, and spawning and rearing of all the forage fish mentioned above (Daley, 2004).

Nearshore modifications impact potential forage fish habitat in the following ways:
Development impacts the shoreline, particularly marinas and boat ramps, which introduce the potential for repeated disturbance and potentially alter nearshore hydrology;
Sewer outfalls introduce pollutants and nutrients to the nearshore;
Overwater structures shade intertidal vegetation and may alter nearshore hydrology; and
Riprap revetments and vertical bulkheads alter nearshore hydrology and may increase wave energy on intertidal areas.

The sand lance's habit of spawning in the upper intertidal zone of protected sand-gravel beaches throughout the increasingly populated Puget Sound basin makes it vulnerable to the cumulative effects of various types of shoreline development. The WAC Hydraulic Code Rules for the control and permitting of in-water construction activities in Washington State include consideration of sand lance spawning habitat protection.

Shorebirds and Upland Birds

A variety of waterfowl and shorebirds utilize the nearshore environment for wintering and breeding. Waterfowl and seaduck species include Canada goose, mallard, wigeon, shoveler, scaup, goldeneye, long-tailed duck, northern pintail, bufflehead, and mergansers. Diving birds such as loons, grebes, scoter, guilemot and cormorants use intertidal habitats for foraging. Approximately seventy-five species of birds are associated with marine nearshore environments in Washington (O'Neil et al., 2001).

Adjacent to the open waters of Puget Sound, the upland terrestrial environment provides habitat for birds, amphibians, reptiles, and insects. The WDFW PHS maps indicate the presence of purple martin nest structures on pilings at the mouth of Boeing Creek from 2000 to 2004. It is unknown whether martin are currently using the structures. Bald eagles use the shoreline and large trees for perching. No nests are currently documented within the City. Marbled murrelet (federal and state listed as threatened species) has also been documented in the shoreline vicinity, but no seabird colonies or waterfowl concentrations are documented within the City. Adolfson Associates (1999) also documented the use of interior uplands by two priority species including the pileated woodpecker and the band-tailed pigeon.

ASSESSMENT OF SHORELINE FUNCTIONS AND OPPORTUNITY AREAS

This section summarizes key findings concerning how functions of the Puget Sound shoreline have been impaired within the City of Shoreline, both by land use activities and alterations occurring at an ecosystem-wide scale, and by activities within the City, its PAA, and its shoreline planning area. This section also identifies opportunities for the protection or enhancement of areas where shoreline ecological functions are intact, and opportunities for restoration of impaired shoreline functions, at both a programmatic (i.e., City-wide) and site specific level. Opportunities for enhanced or expanded public access to the shoreline are also discussed.

Shoreline Ecological Functions

Shoreline ecological functions of the City of Shoreline planning segments are summarized in Table 7. The table is organized around Ecology's list of processes and functions for shorelines using the landscape analysis methodology. It also provides a qualitative assessment of the function performance provided by each reach as Low, Medium or High. Due to the similarity of shoreline functions provided by Segments D and E, these segments are combined in this analysis.

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Table 7. Summary of Ecological Functions

Function	Shoreline Planning Segments			
	Segment A	**Segment B**	**Segment C**	**Segments D & E**
HYDROLOGY				
Transport & stabilize sediment	Low – The burial of the upper foreshore (from industrial development) locked up coarse sand and gravel in the littoral system, preventing longshore transport of sediment. One area of exception on Point Wells is the natural beach within the southern half of Segment A. This natural sand flat and beach area would provide Low to Moderate sediment transport functions.	Low – The burial of the upper foreshore (from railroad construction) locked up coarse sand and gravel in the littoral system, preventing longshore transport of sediment. In addition, small stream mouth estuaries were buried by the railroad. Box culverts and pipes alter sediment dynamics at the mouths. The presence of residential bulkheads, some of which are below the mean high tide level, also interrupts longshore transport of sediment.	Low to Moderate – The area of undisturbed beach west of railroad at Richmond Beach Saltwater Park provides some sediment transport function. It is limited however by its short length (alongshore) and narrow width.	Low (similar to Segment B) Boeing Creek provides a localized fluvial sediment source, but this is limited to a small section of shoreline.
Attenuating wave energy	Low – With the exception of the southern portion, the shoreline is armored with riprap that likely increases wave energy, thus affecting	Low - The rock revetment of railroad and residential	Moderate – The widest area of undisturbed beach west of railroad serves to attenuate	Low (similar to Segment B)

Function	Shoreline Planning Segments			
	Segment A	**Segment B**	**Segment C**	**Segments D & E**
	beach sediment composition.	bulkheads may result in increased wave energy along the shoreline, possibly affecting beach sediment composition.	wave energy more than any other portion of the shoreline.	
Removing excessive nutrients and toxic compounds	Low - Loss of wetlands has reduced shoreline potential for the filtering and cycling of pollutants. Sources of pollutants have increased as a result of urban and land uses, and increased impervious surface within the drainage basins.	Low to Moderate - Barnacle Creek and associated forested wetland provide some filtering of pollutants. However, the wetland is narrow and east of the railroad grade.	Low (similar to Segment A)	Low to Moderate – similar to Segment A, the loss of wetland has decreased the shorelines ability to perform water quality improvement functions. However, the intact portions of the Boeing Creek riparian corridor do provide filtering of pollutants generated upstream.
Recruitment of LWD and other organic material	Low – The industrial development of Point Wells removed sources of LWD and areas where driftwood could accumulate. The small area of undisturbed beach at the southern end of the Segment A provides a Low to Moderate function for recruitment of organic material.	Low (similar to Segment A) The presence of the railroad has resulted in beach narrowing and lowering, and thus decreased driftwood abundance on the	Low to Moderate – The undisturbed beach at Richmond Beach Saltwater Park allows for some recruitment of organic material, but LWD is limited due to the railroad. In addition, the beach gradient is too steep to	Low (similar to Segment B)

Function	Shoreline Planning Segments			
	Segment A	**Segment B**	**Segment C**	**Segments D & E**
		shore. Railroad maintenance includes physical removal of LWD from upstream sources and stream culverts under the railroad are too small to allow passage of woody debris.	have meaningful interaction between LWD and hydrology.	
VEGETATION				
Temperature regulation	Low – Overhanging vegetation in the nearshore environment is absent from the shoreline due to industrial development.	Low (Similar to Segment A) Overhanging vegetation is separated from the nearshore due to existing development on the beach and to the railroad.	Low (Similar to Segment B) Some vegetation is present at Richmond Beach Park but there are few trees and little to no overhang of vegetation due to the railroad.	Low – The railroad separates steep slopes and historic bluffs from nearshore environment.
Attenuating wave energy	Low – Lack of marine riparian vegetation and large woody debris in the nearshore results in no attenuation of wave energy.	Low (similar to Segment A)	Low – Some vegetation is present at Richmond Beach Saltwater Park, but the beach gradient is too steep to allow this function to be performed.	Low (similar to Segment A)
Sediment removal and	Low – Except for the southern portion of Segment A, no large woody debris	Low (similar to Segment	Moderate – Scattered and narrow vegetation	Low (similar to Segment

Function	Shoreline Planning Segments			
	Segment A	**Segment B**	**Segment C**	**Segments D & E**
bank stabilization	or vegetation is present to stabilize or reduce erosion.	A)	provides some bank stabilization. Bank stabilization work has been conducted by the City in the southern portion of the segment.	A)

Function	Shoreline Planning Segments			
	Segment A	**Segment B**	**Segment C**	**Segments D & E**
Recruitment of LWD and other organic material	Low – Industrial development has removed all sources of organic material.	Low – Maintenance of the railroad results in complete interruption of LWD delivery and input from coastal bluffs. The absence of a back beach also significantly reduces accumulation of large wood on the beach.	Moderate – Driftwood is regularly burned by Park users. A small amount of vegetation west of the railroad is a source of organic material and a small amount of back beach is also present.	Low (similar to Segment B)
HABITAT				
Physical space and conditions for reproduction	Low to Moderate – Industrial development at Point Wells resulted in loss of historic sandspit and lagoon. Existing large pier and dock also reduces intertidal habitat. However, eelgrass is mapped off-shore which provides spawning habitat for forage fish. Shellfish beds are also documented in the southern portion of the segment.	Low to Moderate – Marine nearshore habitat for forage fish remains intact due to lack of overwater structures (piers and docks), but the railroad construction resulted in the loss of intertidal habitat (for beach spawning forage fish), longshore lagoon and small stream mouth estuaries.	Low to Moderate – Marine nearshore habitat for forage fish remains intact due to lack of overwater structures (piers and docks), but the railroad construction resulted in the loss of intertidal habitat (for beach spawning forage fish), longshore lagoon and small stream mouth estuaries. Similar to Segment A, eelgrass and shellfish beds are present. However, a sewer outfall is present that likely introduces	Low to Moderate – The sediment supplied at the mouth of Boeing Creek provides feeding, spawning and rearing habitat for several species of forage fish.

Function	Shoreline Planning Segments			
	Segment A	**Segment B**	**Segment C**	**Segments D & E**
			nutrients and pollutants to the nearshore area potentially altering current cycles and food web interactions.	
Resting and Foraging	Low to Moderate – Large pier shades nearshore habitat and limits the growth of vegetation. Industrial uses replace beach habitats. However, area of undisturbed beach provides habitat for shorebirds and has documented forage fish use.	Low – Residential land uses and bulkheads limit the use of nearshore habitat for resting and foraging.	Moderate - The lack of overwater structures (marinas, piers, etc.) allows the growth of nearshore vegetation that provides resting habitat for juvenile salmonids. The absence of a back beach habitat and marine riparian vegetation results in no habitat for piscivorous birds, shorebirds and numerous other organisms.	Moderate - Similar to Segment C with the addition of dense eelgrass present to the north and south of Boeing Creek.
Migration	Low – The large pier at Point Wells may divert juvenile salmonids away from nearshore, resulting in increased predation.	Low – Bulkheads along the shoreline may divert juvenile salmonids away from nearshore, resulting in increased predation.	Moderate to High – No impediments to salmon migration are present.	Moderate to High (similar to Segment C)

Function	Shoreline Planning Segments			
	Segment A	**Segment B**	**Segment C**	**Segments D & E**
Food production and delivery	Low to Moderate – The disconnection of marine riparian vegetation from the nearshore has eliminated any biotic input or food for forage fish and salmon. Eelgrass beds are present off-shore.	Low – Residential land uses and bulkheads may disrupt biotic inputs from marine riparian vegetation. Eelgrass beds are present.	Low to Moderate – The small amount of vegetation at Richmond Beach Saltwater park likely supplies some biotic input, although small because only limited vegetation is present. Eelgrass beds are present off shore.	Low to Moderate – Similar to Segment A with the addition of eelgrass beds that provide important food sources for forage fish and migrating salmonids.

Programmatic Restoration Opportunities

Table 8 provides a summary of shoreline ecological functions for the Coastal/Nearshore Environment. Causes of impairment and the relative scale at which impairments are occurring (e.g., watershed, shoreline segment scale, or multiple scales) are identified. General or programmatic restoration opportunities to address impairments are described. Individual residential bulkheads and railroad riprap constitute existing and necessary protection from wave energy and therefore are not included in any Programmatic Restoration Opportunities.

Table 8. Summary of Shoreline Functions and Programmatic Restoration Opportunities

Condition and Causes of Impairment	Scale of Alterations and Impairment	Shoreline Ecological Functions Affected	Programmatic Restoration Opportunities
Bulkheads on shoreline deflect wave action and disrupt natural coastal processes. Bulkheads disrupt natural delivery of sediment to the coastal areas, as well as increase beach scouring and wave deflection.	Watershed and Reach scale	Hydrologic Sediment transport and deposition	Potential redevelopment of Point Wells is an opportunity to replace hard armoring with soft-shore.
Alteration to and development on feeder bluffs reduce the potential of these areas to provide sediment delivery to coastal zones, disrupting natural coastal beach accretion.	Watershed scale	Sediment delivery	No active feeder bluffs in City due to BNSF railroad. Removal of bulkheads in Point Wells may reestablish some sediment delivery processes. Culverts conveying surface water flow from streams continue to be an important source of sediment delivery. Replace stream culverts with larger box culverts or other fish-friendly structures.

Condition and Causes of Impairment	Scale of Alterations and Impairment	Shoreline Ecological Functions Affected	Programmatic Restoration Opportunities
Wetlands adjacent to the Puget Sound coast are altered due to development and land use and can no longer provide essential storage, recharge, or water quality functions.	Watershed and Reach scale	Hydrologic Hyporheic Water quality	Target local coastal wetland restoration and mitigation so they provide storage, detention, and water quality functions. Restore and reconnect wetlands adjacent to Puget Sound coast such as Barnacle Creek wetlands. Protect intact wetlands along the Puget Sound coast such as those associated with Coyote Creek.
Riparian habitat along the coast has been impaired through land development and marine riparian vegetation is generally absent due to presence of the BNSF Railroad. Input of large wood from the bluffs is largely eliminated by BNSF railroad maintenance practices. The absence of a back beach significantly reduces accumulation of large wood on the beach.	Watershed and Reach scale	Riparian habitat structure	Protect and restore tributaries to the Puget Sound which provide riparian habitat and deliver woody debris and sediment, such as Boeing Creek.

Condition and Causes of Impairment	Scale of Alterations and Impairment	Shoreline Ecological Functions Affected	Programmatic Restoration Opportunities
Man-made debris and remnant structures in the coastal areas disrupt intertidal habitats and salmonid passage. Water quality in the nearshore environment is impaired due to remaining creosote pilings, runoff from creosote railroad ties, and other toxic debris and sewer outfalls. Sediment transport and accretion processes disrupted.	Watershed and Reach scale	Intertidal habitat Water quality	Target removal of abandoned man-made structures and dilapidated docks in Richmond Beach and Point Wells areas. Remove creosote pilings and debris at Point Wells, which harm intertidal habitats. Encourage BNSF to replace creosote railroad ties with non-toxic materials.

Site-Specific Restoration Opportunities

A number of site-specific City and non-City projects that would occur in the City's shoreline jurisdiction are in various stages of planning, as summarized in Table 9 below. The City could explore working with applicants, resource agencies, and permitting agencies to ensure that components or mitigation measures associated with these projects are consistent with the City's shoreline management goals. Opportunities and projects identified in the table are described in more detail immediately following the table.

Table 9. Summary of Site-Specific Opportunities and Projects for Public Access and Restoration

Segment	Existing Public Access	Public Access Opportunities	Public Access Projects	Site-Specific Restoration Opportunities	Site-Specific Restoration Projects
A	Point Wells Beach (informal and limited access) at the south end of segment	South Point Wells Habitat Restoration	None	Point Wells Complete Site Restoration South Point Wells Habitat Restoration South Point Wells Lagoon Creation Barnacle Creek Wetland Construction	King County Brightwater Treatment Plant project at Point Wells site. Project includes restoration plantings.
B	Point Wells Beach (informal and limited access) at the north end of segment	None identified	Richmond Beach Pump Station Park includes interpretive watchtower	None identified	None proposed
C	Richmond Beach Saltwater Park	None identified	Public access improvements at Richmond Beach Saltwater Park	Restore and protect native marine riparian vegetation at Richmond Beach Saltwater Park, west of BNSF railroad tracks.	Master Plan for Richmond Beach Saltwater Park. The plan includes native plant restoration and slope stability efforts.
D	None	None identified	None proposed	None identified	None proposed
E	Innis Arden Reserve (limited access)	None identified	None proposed	Boeing Creek Enhancement	Boeing Creek Park and Underground Storage Pipe project

Segment A

Point Wells Restoration Opportunities
The *Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan Volume II* (WRIA, 2005) identifies many potential restoration and protection projects as part of their Tier 1 Initial Habitat Project List for nearshore/estuary Reaches 8-12 and Sub-reaches. Three specific projects were identified at Point Wells, which is within Reach 10.

Point Wells Complete Site Restoration: Restore the entire Point Wells site by completely removing the sea wall, riprap dike, and fill. Regrade the site and reconnect local freshwater sources to re-create a tidal lagoon system with an opening at the north end of the point, which was probably the original mouth of the tidal lagoon system. Reestablish native riparian and backshore vegetation. Project categorized as "high" for benefits to Chinook and "low" for feasibility.

South Point Wells Habitat Restoration: Enhance the south shoreline by removing riprap dike, eliminating invasive plants, and reestablishing native riparian and backshore vegetation. The south shoreline is approximately 800 feet long, has sandy substrate, supports some beach grass and other herbaceous vegetation, and includes a fair amount of large woody debris. The south shoreline, with its proximity to nearby residential areas, has potential value for public access. Project categorized as "high/medium" for benefits to Chinook and "medium/low" for feasibility.

South Point Wells Lagoon Creation: Creation of a three acre inter-tidal lagoon at the south end of the Point Wells site that may have historically been a marsh (before it was filled). The south shoreline is approximately 800 feet long, has sandy substrate, supports some beach grass and other herbaceous vegetation, and includes a fair amount of large woody debris. Project categorized as "high/medium" for benefits to Chinook and "medium/low" for feasibility.

Barnacle Creek Wetland Construction Opportunity
The *Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan Volume II* (WRIA, 2005) also identifies one specific project within the Barnacle Creek drainage. The project involves creation of tidally influenced wetland habitat on the east side of the BNSF railroad tracks at Barnacle Creek. Project categorized as "low" for both benefits to Chinook and feasibility.

Brightwater Treatment Plant Project at Point Wells
The KCDNRP WTD is currently constructing a regional wastewater treatment plant called Brightwater in unincorporated Snohomish County. A conveyance line from the treatment plant to the Point Wells site is currently being built in order to convey treated wastewater to Puget Sound. A marine outfall will be installed offshore of the Point Wells site, extending approximately one mile along the sea bottom of Puget Sound. Following construction, King County will landscape a portion of the Point Wells site with Puget Sound coastal grasses and enhance the shoreline buffer. Eelgrass removed from the

outfall construction site will be replanted and monitored until 2019 to ensure effective recovery. The project is anticipated to be complete by the year 2010 (KCDNRP, WTD website, 2008).

Segment B

Richmond Beach Pump Station Park Project
A new park site is located in the Richmond Beach neighborhood at Richmond Beach Drive NW and NW 198th Street. The City obtained a 50-year recreation easement on a 2.3-acre parcel of land from King County as mitigation for impacts from the Brightwater Treatment Plant project. In the mitigation agreement between the City of Shoreline and King County, it was agreed that the County would provide $750,000 of mitigation funding for City of Shoreline community improvements. Most of the mitigation funding has been designated for the creation of a new City park at the pump station site. This park is currently being called Richmond Beach Pump Station Park until it receives a new name following City and County naming policies. A 2005 Master Plan for the park includes a small parking area, restroom, interpretive watchtower overlooking the BNSF railroad and Puget Sound, and play areas. No shoreline access west of the BNSF railroad is proposed (City of Shoreline website, 2008).

Segment C

Richmond Beach Saltwater Park Project
The City's Master Plan for Richmond Beach Saltwater Park (City of Shoreline, 2007b) includes improvement of the park entrance and road; pedestrian sidewalks, stairs and trails; bridge access and safety; a new beach wash-down area; a new overlook parking area across from the caretaker's residence; a new mid-level terrace area with parking, picnic area and gathering space; and new entry, way-finding and interpretive educational signage. In addition, the plan includes selective site improvements and a program of restoration ecology to control erosion and eliminate invasive plant species in the Park and nearshore areas. Phase I improvements include slope stability efforts in specific areas that showed evidence of unstable soil conditions or erosion during geotechnical investigation. Improvements include controlling public access away from steep slope areas, improving access across steep slopes by constructing raised stairs and boardwalks in selected locations, and by implementing a community participation program of removing invasive plants and replacing them with native plant species tolerant of dry, sandy and gravelly soils. Future phases of the master plan propose beach and dune restoration.

Segment D

No site-specific projects or opportunities have been identified to provide public access or restore shoreline functions and processes. Opportunities in this segment are limited because properties along the shoreline are privately owned. There are also hazards along the shoreline including unstable slopes and landslide hazards.

Segment E

Boeing Creek Park and Underground Storage Pipe Project

In October 2007, King County completed construction of a new 500,000-gallon underground storage pipe in Boeing Creek Park to temporarily store wastewater during large storms and help reduce overflows to Puget Sound. The pipe replaced an existing 24-inch sewer in Boeing Creek Park owned by the Ronald Wastewater District. The new sewer is 12 feet in diameter and about 640 feet long. The new underground storage pipe is conveying normal wastewater flows toward the Hidden Lake Pump Station. At the request of the City of Shoreline, King County also graded the existing stormwater facility in Boeing Creek Park. The County grading increased the capacity of the facility and stabilized the area. The City then followed with their own park improvement project in 2008. Improvements to the park include new on street parking, ADA pathway improvements, new picnic areas, benches, stormwater detention pond upgrades including a cascading stone water feature, irrigation, native plant landscaping, and trail improvements including improvements to the lower log crossing. The suspension foot bridge will not be part of these improvements as the December storm caused erosion damage to the creek banks including the proposed site for the bridge (City of Shoreline website, 2008).

Boeing Creek Enhancement

The *City of Shoreline Stream Inventory* (TT/KCM, 2004b) notes that the foremost option for recovery within the City is enhancement of the lowest reach of Boeing Creek. The key habitat enhancement activity is to reduce stormwater runoff from developed areas adjacent to Boeing Creek. By reducing stormwater runoff, landslides will occur at more natural levels and sediment loading in the stream will be reduced.

DATA GAPS

This shoreline inventory and characterization report relies on data described in each technical section. In some cases, data identified as needed for the analysis and characterization were not available for incorporation in this report. The 2003 Ecology Guidelines require that data gaps or missing information be identified during the preparation of the shoreline inventory and analysis. The following are considered data gaps at this time:

Aerial photographs used in this analysis are dated 2002. More recent aerial photographs are not currently available or have not been purchased by the City.

Impervious surface information used in this report has been approximated using aerial photographs. Additional information may exist that needs to be explored.

Data related to impacts to shoreline resources from the operation and maintenance of the BNSF railroad tracks is not available. Coordination with BNSF Railway is desired to achieve cooperation between City activities in the shoreline jurisdiction and BNSF operation and maintenance activities.

Tribal information on fisheries or other marine shoreline resources is currently lacking.

Location of archaeological resources is unknown. Coordination with Native American tribal organizations would help to identify the probability or likelihood that intact archaeological resources may be present in the shoreline planning area.

SUMMARY

The City's shoreline jurisdiction includes approximately 4 miles of Puget Sound coastline within the city limits and in its PAA. Similar to other cities along the Puget Sound, existing development and infrastructure has affected the shoreline environment within the City of Shoreline. Ecosystem-wide processes and ecological functions that have been altered in the marine shoreline include sediment processes, large woody and organic debris recruitment and transport, water quality, riparian vegetation and habitat conditions.

Shoreline armoring to protect the BNSF railroad has most severely altered sediment processes in the City. Sediment delivery is limited to several streams that deliver sediment via culverts under the railroad right-of-way. Forage fish spawning still occurs at these limited points of sediment input (e.g. Boeing Creek) (Daley, 2004). In the Richmond Beach neighborhood, sediment processes have been altered by armoring to protect residential development in several areas, but still provide important habitat and sediment functions.

Clearing of riparian vegetation along the marine shoreline for the BNSF Railway construction and maintenance, and other shoreline armoring has resulted in a lack of large woody and organic debris available for recruitment to the system. The lack of debris in turn affects the stability of the beaches as the presence of beach logs and debris can reduce erosion by dissipating wave energy and trapping sediment.

Restoration and preservation activities that could improve ecological functions and eco-system wide processes in the marine shoreline include: reduction of stormwater runoff to landslide-prone areas; revegetation of riparian areas to provide shade to cool water temperatures, filter run-off and to provide a source of large woody debris and organic materials; limiting shoreline armoring to allow for continued sediment delivery and to protect nearshore habitat; and improvements to water quality in adjacent upland areas.

Table 10 below summarizes the shoreline characterization for each planning segment. The segments are shown on Map 1. Overall, the Puget Sound shoreline in the City of Shoreline is uniform in its development pattern and biological diversity. The BNSF railroad extends the length of the shoreline. Segment breaks were primarily associated with changes in land use. Point Wells, located in the city's PAA, is the only industrial facility along the shoreline, contrasting with the residential nature of the city's shoreline. South of Point Wells, land use breaks along segment boundaries are primarily associated with varying densities of residential development, and parks and open space resources such as Richmond Beach Saltwater Park and Innis Arden Reserve. While Richmond Beach Saltwater Park provides recreational facilities and access to the Puget Sound shoreline, access at other open space and park resources are limited. Shoreline modifications associated with the railroad and residential development are found

throughout the majority the city's shoreline planning area, with the largest contiguous unmodified portion occurring at Richmond Beach Saltwater Park.

Biological resources and potential habitat areas along the Puget Sound shoreline are largely uniform throughout the city. Less developed areas along the shoreline such as Innis Arden Reserve and Boeing Creek Reserve offer greater habitat potential for wildlife. Areas regulated as critical areas are found throughout the shoreline planning area, primarily comprised of inter-tidal wetlands, streams discharging to Puget Sound, seismic hazards, flood hazards and landslide hazard areas associated with bluffs. Critical areas are listed in Table 10 under Hazard Areas and Habitat / Habitat Potential. Streams discharging to Puget Sound, many of which pass through culverts under the railroad, are listed under Stormwater Outfalls / Stream Discharges.

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Table 10. Shoreline Segment Summary Matrix, City of Shoreline

Shoreline Segment	Land Use / Transportation	Stormwater Outfalls / Stream Discharges	Public Shoreline Access	Hazard Areas	Habitat / Habitat Potential
A	Petroleum Facility King County Right-of-Way (ROW)	Combined stormwater and groundwater remediation outfall near south end of dock	Point Wells Beach (informal and limited access) at the south end of segment	Soil, Groundwater and Surface Water Contamination Seismic Hazard Areas	Wetlands Fish and Wildlife Areas (Forage Fish, Salmonids, shorebirds and piscivorous birds, shellfish, eelgrass and kelp)
B	Single Family Residential BNSF Railway ROW Utility Vacant	Richmond Beach Wastewater Pump Station emergency overflow outfall; Stream Outfalls: Barnacle Creek	None	Flood Hazard Areas Seismic Hazard Areas Landslide Hazard Areas	Wetlands Fish & Wildlife Areas (Forage Fish, Salmonids, Banks/Bluffs, shorebirds and piscivorous birds, shellfish, eelgrass and kelp)
C	BNSF Railway ROW Park Single-Family Residential	None	Richmond Beach Saltwater Park	Flood Hazard Areas Seismic Hazard Areas Landslide Hazard Areas	Wetlands Fish & Wildlife Areas (Forage Fish, Salmonids, Banks/Bluffs, shorebirds and piscivorous birds, shellfish, eelgrass and kelp)
D	Single-Family Residential BNSF Railway ROW	Stream Outfalls: Storm and Blue Heron Creeks	None	Flood Hazard Areas Seismic Hazard Areas Landslide Hazard Areas	Wetlands Fish & Wildlife Areas (Salmonids, shorebirds and piscivorous birds, shellfish, eelgrass and kelp)
E	BNSF Railway ROW Single-Family Residential Open Space Vacant	Stream Outfalls: Coyote, Boeing, and Highlands Creeks	Innis Arden Reserve (limited access)	Flood Hazard Areas Seismic Hazard Areas Landslide Hazard Areas	Wetlands Fish & Wildlife Areas (Forage Fish: Boeing Creek Mouth, Salmonids, shorebirds and piscivorous birds, shellfish, eelgrass and kelp)

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Attachment I

CUMULATIVE IMPACTS ASSESSMENT

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memorandum

date February 22, 2012, revised March 1, 2012

to Miranda Redinger, City of Shoreline

from Reema Shakra and Teresa Vanderburg, ESA

subject **City of Shoreline, Shoreline Master Program Update –Draft Cumulative Impacts Analysis**

The purpose of this memo is to assess the cumulative impacts of reasonably foreseeable future development in the shoreline that would result from development and activities over time under the proposed City of Shoreline SMP required by WAC 173-26-186(8)(d). This memorandum was first prepared in November 2010 based on the October 2010 Draft SMP. In February 2012, the memorandum was updated to reflect the changes since made to the SMP, and is based upon the February 2012 SMP (received by ESA on February 21, 2012). Minor revisions were made on March 1, 2012. This memorandum is intended to support the environmental review of the proposed SMP amendments under the State Environmental Policy Act (SEPA).

For the City of Shoreline, shorelines of the state in the city limits and potential annexation area (PAA) include approximately 5 miles of the Puget Sound shoreline.

The purpose of evaluating cumulative impacts is to insure that, when implemented over time, the proposed SMP goals, policies and regulations will achieve no net loss of shoreline ecological functions from current "baseline" conditions. Baseline conditions are identified and described in the City of Shoreline Inventory and Characterization Report (ESA Adolfson, 2008). The proposed Shoreline SMP provides standards and procedures to evaluate individual uses or developments for their potential to impact shoreline resources on a case-by-case basis through the permitting process. The purpose of this memorandum is to determine if impacts to shoreline ecological functions are likely to result from the aggregate of activities and developments in the shoreline that take place over time under the updated SMP.

The guidelines state that, "to ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs, and regulations that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts among development opportunities. Evaluation of such cumulative impacts should consider:

- Current circumstances affecting the shorelines and relevant natural processes;
- Reasonably foreseeable future development and use of the shoreline; and
- Beneficial effects of any established regulatory programs under other local, state, and federal laws."[1]

This cumulative impacts assessment uses these three considerations as a framework for evaluating the potential long-term impacts on shoreline ecological functions and processes that may result from development or activities under the proposed SMP over time.

Current Circumstances

The City prepared the first draft of the shoreline inventory and characterization report in 2004. As part of the City's current comprehensive SMP update process, the report and map folio were updated in the fall of 2008. The report was revised in December 2008 to address technical review comments and November 2009 and April 2010 to incorporate public review comments. The Shoreline Inventory and Characterization (ESA Adolfson, 2008) identifies existing conditions and evaluates the ecological functions and processes in the City's shoreline jurisdiction. The inventory included all shoreline areas within the City and its Potential Annexation Area (PAA) and included a characterization of ecosystem processes functioning at a watershed scale. "Shoreline planning area" is a term used in this tech memo to refer to the approximate area within the City's shoreline jurisdiction, or areas subject to SMP regulations.

For the purposes of the Inventory and Characterization Report, the Puget Sound shoreline was addressed in five shoreline planning segments, as shown on Map 1, and described below in Table 1. Reach breaks were assigned based upon land uses and existing shoreline conditions as described in the inventory report. The most dominant land use in the shoreline is the Burlington Northern Santa Fe (BNSF) right-of-way, which extends in a north-south direction along the entire length of the shoreline area within city limits. The remaining portions of the shoreline planning area are occupied by industrial uses, residential uses, and parks and open space. Approximately 97 percent of the City's shoreline adjacent to Puget Sound is modified with riprap and bulkheads (WDNR, 2001). The majority of this armoring is associated with the BNSF railroad bed.

Table 11. Shoreline Planning Segments

Shoreline Segment	Approximate Length (feet)	Approximate Segment Acreage	General Boundaries
A	3,411	15.6	Potential Annexation Area / Point Wells: located directly north of the city limits in unincorporated Snohomish County.
B	4,724	21.7	Richmond Beach residential area: the Snohomish County line south to Richmond Beach Saltwater Park.
C	2,801	11.0	Richmond Beach Saltwater Park south to Storm Creek culvert.
D	1,295	5.7	Innis Arden residential area: south of Richmond Beach Saltwater Park to Innis Arden Reserve Park.
E	9,424	41.6	Innis Arden Reserve / Highlands: Innis Arden Reserve Park south to city limits.

Source: City of Shoreline, 2002
[1] WAC 173-26-286(8)(d)
[2]Shoreline segments were developed in 2004 as part of the first draft inventory and characterization report. The shoreline segments were developed for the sole purpose of describing areas along the shoreline. Segments were created based on physical distinction along the shoreline, the level of ecological functions provided by each segment, as well as existing land

[1] WAC 173-26-286(8)(d)

uses and zoning. Shoreline segments should not be confused with shoreline environment designations. Shoreline environment designations were developed after the inventory and characterization report was completed. Environment designations are analogous to zoning designations and are incorporated directly into the City's Draft Shoreline Master Program. In the City's Draft Shoreline Master Program, there are 6 environment designations and each one has a distinct purpose statement and specific uses and modifications that are permitted, conditionally permitted or prohibited. Regulations specific to each environment designation are included as well.

The following sections further summarize baseline conditions, or current circumstances, with regard to the City's Puget Sound shoreline.

Map 1. Shoreline Planning Area

Physical and Coastal Processes

Puget Sound beach morphology and composition is dependent upon three main influences: wave energy, sediment sources, and relative position of the beach within a littoral cell. Wave energy is controlled by fetch, the open water over which winds blow without any interference from land. Wind-generated wave action gradually erodes beaches and the toe of coastal bluffs, leading to landslides. These coastal bluffs are the primary source of sediment for most Puget Sound beaches. In the city, coastal bluffs are separated from the shoreline by the BNSF Railway, thus completely removing bluff sediment sources. Although riparian vegetation is located along portions of the shoreline, the shore modifications associated with the BNSF Railway and BNSF maintenance activities prevent recruitment of large woody debris to the shoreline. These shore modifications also preclude net shore-drift along the Puget Sound. A small amount of sediment is delivered by fluvial sources (streams) in the city, although this process is also impaired by culvert systems and the BNSF Railway. Construction of the railroad buried much of upper foreshore beach, thereby locking up coarse sand and gravel in the littoral system. This limits or precludes longshore transport of sediment.

Shoreline Modifications

Approximately 97 percent of the City's shoreline adjacent to Puget Sound is modified with riprap and bulkheads (WDNR, 2001). The majority of this armoring is associated with the BNSF railroad bed. As a result, sediment delivery from upslope sources is limited to several streams that deliver sediment via culverts under the railroad ROW. Forage fish spawning still occurs at these limited points of sediment input.

There are no docks, piers, or over-water structures along Puget Sound within the City limits. However, within the PAA, Point Wells contains a large industrial dock used for both import and export of materials to and from the facility. Construction of the King County Wastewater Treatment Brightwater Conveyance pipeline and marine outfall project is currently underway at the Point Wells site.

Clearing of riparian vegetation along the marine shoreline for the BNSF Railway construction and maintenance, residential uses, bulkheads and other shoreline armoring has resulted in a lack of large woody and organic debris available for recruitment to the marine system. The lack of debris in turn affects the stability of the beaches as the presence of beach logs and debris can reduce erosion by dissipating wave energy and trapping sediment. Large woody debris also provides thermoregulation of sediment for spawning forage fish and detritus recruitment.

Habitat and Species

The Puget Sound nearshore environment is a highly productive zone that provides habitat for a variety of aquatic and terrestrial species. The "nearshore" is generally considered to be an area extending from a point underwater where light penetrates to the bottom (the "littoral zone"), across the intertidal zone and beach, up to the top of marine bluffs. Important documented features of the nearshore that provide habitat include:

- Banks, bluffs, beaches and backshore (sediment sources, substrate, and storm berms);
- Tidal flats (intertidal or shallow subtidal areas used by juvenile salmonids, shorebirds, and shellfish);
- Eelgrass meadows and kelp forests (feeding and rearing habitat for wide variety of marine organisms); and
- Stream mouths and pocket estuaries (fish and wildlife corridors and source of fluvial sediment to nearshore).

Within the City's shoreline planning area, there are seven streams that feed into the Puget Sound. Segment A has an unnamed tributary of Barnacle Creek that is located east of the BNSF railroad and south of Point Wells. It travels south where it connects to Barnacle Creek in Segment B. Lost Creek is located north of the city limits

in the Town of Woodway. It flows southwest both in piped and open water sections towards Puget Sound. It appears to connect to Barnacle Creek before discharging into Puget Sound in Segment B. Barnacle Creek is formed by the confluence of Upper Barnacle Creek and Lower Barnacle Creek and discharges to Puget Sound in Segment B. A palustrine forested wetland, less than one acre in size, is associated with Barnacle Creek. Storm Creek and Blue Heron Creek discharge to Puget Sound in Segment D. Coyote Creek, Boeing Creek, and Highlands Creek discharge to Puget Sound in Segment E. A scrub/shrub wetland is associated with Coyote Creek.

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

- Shellfish (clams, mussels, and crab);
- Salmonids (including listed species such as Chinook and bull trout);
- Forage fish (surf smelt, sand lance, and Pacific herring); and
- Shorebirds and waterbirds.

Land Use and Public Access

The BNSF Railway right-of-way (ROW) extends in a north-south direction along the entire length of the City's shoreline planning area. It is the most dominant land use in the shoreline, occupying 48 percent of the total shoreline planning area. Residential development occupies approximately 19 percent of the total shoreline planning area while Point Wells (in the PAA), the only industrial property located along the Puget Sound shoreline, occupies approximately 20 percent. The remaining land uses are parks and open space (8 percent) and vacant properties (2 percent).

Public access opportunity is provided at Richmond Beach Saltwater Park in Segment C. It is a regional 40-acre park that provides active and passive uses including picnic areas, shelter buildings, a playground area, observation areas, trails, and Puget Sound shoreline access. Kayu Kayu Ac Park, in Segment B, is a 2-acre city park recently opened near Richmond Beach Pump Station; this provides shoreline views. Innis Arden Reserve is a 23-acre natural open space area/greenway passive-use park located in Segment E along the bluffs overlooking Puget Sound. Hiking/walking trails represent the main activity of this passive-use reserve. Although trails eventually lead to the shoreline, the public has to cross the BNSF railroad tracks and riprap to reach the Puget Sound shoreline. Blue Heron Reserve (Segment C) and Coyote Reserve (Segment D) are privately owned tracts that are associated with Blue Heron Creek and Coyote Creek, respectively. No public shoreline access is permitted along these tracts. Boeing Creek Reserve is a private 4-acre natural area associated with Boeing Creek located along the Puget Sound shoreline in Segment E. It is preserved as private open space. No public shoreline access is permitted from this reserve along the bluff.

Reasonably Foreseeable Future Development and Use

Substantial development or redevelopment within the City's shoreline planning area is unlikely. However, limited development may occur on vacant parcels, residential parcels with potential for redevelopment and residential parcels that can be subdivided. Such parcels occupy 16.5 acres (17 percent) of the City's shoreline planning area. A majority of these properties is located in Segments B and E and is discussed in more detail below. Houses on existing single-family lots are also expected to grow larger through additions up to the maximum allowed building envelope under the zoning, SMP and CAO regulations and contingent upon receiving required City permit approvals. However, existing residential development along 27th Avenue NW are constrained by zoning and CAO regulations, making expansion of existing building footprints less likely.

Point Wells is the only commercial property that may have a major redevelopment. It is unknown if the redevelopment would take place under Snohomish County's, Woodway's or Shoreline's jurisdiction.

There are several factors which will inhibit major new development along the Puget Sound shoreline. One is the BNSF Railway which occupies 48 percent of the city's shoreline planning area, extending in a north-south direction along the entire length of the shoreline. This limits development potential because vehicular access across the BNSF tracks is limited. The City has received no indication that BNSF would sell their ROW property or provide new road crossings of the tracks. A second factor that contributes to limiting development is steep slopes and landslide hazard areas located throughout portions of Segments B - E.

Vacant Parcels

In order to evaluate the potential for shoreline development in the reasonably foreseeable future, King County Assessor records (2007) were examined to identify parcels classified as "vacant" that are located within the shoreline jurisdiction. While the term "vacant" may not always accurately reflect current conditions (such as protected open space, steep slopes, wetlands, or other lands with development restrictions), the classification generally indicates that no structural improvements have been made or assessed for taxes on the property. Depending on the land use and zoning designations, these areas may be subject to new development in the future.

Vacant parcels occupy only 2 percent of the City's shoreline planning area (including the PAA) and account for a total of 1.5 acres. The vacant properties are located in Segments B and E. This percentage value does not include BNSF property or City-owned right-of-way. Development of vacant lands is therefore not anticipated to cause a significant change in the existing condition of the City's shorelines.

Redevelopment Potential

In addition to the potential for development on vacant parcels, there is potential for underutilized lots along the Puget Sound to redevelop. For the purposes of this Cumulative Impacts Assessment, we based redevelopment potential on the assumption that parcels in a single-family zone (R-4 and R-6) with a land value assessed by King County at 50% or higher than building value are likely to redevelop some time in the future. Based on this assumption, 22 parcels of the City's shoreline planning area have the potential to redevelop. All 22 parcels are located in Segment B and account for a total of 3 acres or 3 percent of the City's shoreline planning area.

The only major commercial property that is likely to redevelop is Point Wells. Snohomish County, in response to a petition from the Point Wells property owner, changed the Comprehensive Plan designation and zoning designation of Point Wells from Urban Industrial to Urban Center. Urban Center allows for a mix of high-density residential, office and retail uses. The City of Shoreline has a Comprehensive Plan designation of Mixed Use, which is intended to encourage the development of pedestrian oriented places, with architectural interest,

that integrate a wide variety of retail, office and service uses with residential uses. It seems likely that the property would redevelop based on the recent changes to the County's designations. However, the property would need to be remediated to address soil and groundwater contamination. Vehicular access to the property is severly limited and poses considerable challenges to developing high-intensity land uses.

Subdivision Potential

A third approach to determining potential development along the Puget Sound was to determine whether there are residential parcels that have the potential for subdividing. We based subdivision potential on the assumption that parcels in single-family zone (R-4 and R-6) that are at least 2 times larger than the minimum lot size allowed in the zone are likely to subdivide sometime in the future. Fifty-three parcels have the potential to subdivide, 9 of which are located in Segment B, 5 in Segment C, 12 in Segment D, and 27 in Segment E. The total acreage amount within the City's shoreline planning area is 12 acres or 12 percent of the City's shoreline planning area.

Changes to Shoreline Environment Designations

SMPs establish a system of "shoreline environment designations" that provide a uniform basis for applying policies and use regulations within distinctly different shoreline areas. Shoreline environment designations function like zoning overlays. That is, they do not replace the underlying zoning regulations for density, setbacks, etc., but they may impose additional development standards or regulations for portions of property within the shoreline jurisdiction. Generally, environment designations are based on existing and planned development patterns, biological and physical capabilities and limitations of the shoreline, and a community's vision or objectives for its future development.

When the City of Shoreline incorporated in 1995, it adopted regulations outlined in Title 25 (Shoreline Management Plan) of the King County Code as the interim shoreline management code (Shoreline Municipal Code [SMC] 16.10). Three shoreline environment designations are established in the King County Shoreline Management Master Program and were applied to the City's shorelines:

1. Urban,
2. Rural, and
3. Conservancy

Since the City's Potential Annexation Area is located in Snohomish County, the shoreline environment designation that currently applies to Point Wells is Urban.

The proposed SMP environment designations per the October 2010 Draft SMP include the following:

- "Point Wells Urban" environment to accommodate higher density uses while protecting existing ecological functions and restoring ecological functions that have been degraded.
- "Point Wells Urban Conservancy" environment to provide a specific designation unique to an industrial use or mix of uses that can be developed.
- "Urban Conservancy" environment to protect and restore relatively undeveloped or unaltered shorelines to maintain open space, floodplains or habitat, while allowing a variety of compatible uses.
- "Waterfront Residential" environment to distinguish between the residential portions of the coastline where natural and manmade features preclude building within the shoreline jurisdiction and the section

along 27th Avenue NW where residential structures lie westerly of the BNSF railroad ROW and directly abut the Puget Sound.

- "Shoreline Residential" environment to accommodate residential development and accessory structures that are consistent with the City's Shoreline Master Program.
- "Aquatic" environment to protect, restore, and manage the unique characteristics and resources of the areas waterward of the ordinary high-water mark.

The proposed environment designations are consistent with both the existing land use pattern and Comprehensive Plan future land use designations.

Changes to Development Standards and Use Regulations

The proposed SMP offers several changes to the development regulations that encourage shoreline conservation and prohibit activities that would cause adverse impact to shoreline functions and processes. Many of these changes deal with shoreline modification such as bulkheads and riprap revetments along much of the City's shoreline. These shoreline modifications have significantly altered the natural net-shore drift direction and the availability and local distribution of beach sediment. Other changes related to specific uses in the shoreline are also designed to protect shoreline ecological functions and processes, while continuing to allow legal uses, public access, and appropriate development.

This section describes in general terms how the proposed SMP protects shoreline functions and processes to achieve no net loss. Appendix A cites specific provisions in the proposed SMP (City of Shoreline, 2010) and Draft Restoration Plan (ESA Adolfson, 2009) that serve to protect and enhance shoreline ecological functions. For each proposed shoreline environment designation, Appendix A provides the current conditions, likely future changes, potentially impacted shoreline processes and functions, effects of proposed SMP provisions, existing regulatory controls, and an assessment of expected future performance.

The proposed SMP offers several changes to the development regulations that encourage shoreline conservation and prohibit activities that would cause adverse impact to shoreline functions and processes. One of the most significant changes is the application of a vegetation conservation area on the Puget Sound and accompanying requirements for vegetation enhancement. Most of the City's Puget Sound shoreline was developed under King County development standards prior to city incorporation. Puget Sound is not considered a critical area under the City's Critical Areas Ordinance (Shoreline Municipal Code Chapter 20.80) and did not have buffer standards or requirements. Current King County standards require a 25-foot setback from the ordinary high water mark (OHWM) for single-family development in Urban and Rural environments and a 50-foot setback from the OHWM in the Conservancy environment. The proposed SMP standards and regulations would establish a 20-150 foot vegetation conservation area. Only 9 percent of the total linear length of the City's Puget Sound shoreline would be regulated with a 20-foot vegetation conservation area. The northern portion of the PAA would be regulated with a 50-foot vegetation conservation area (with accompanying restoration). The remainder of the City's shoreline will be classified as Shoreline Residential and Urban Conservancy with a 115 to 150 foot vegetation conservation area. Extensive land disturbing activities that require a permit are required to implement a plan that involves revegetation (See 20.230.200.B.4 of Draft SMP).

Regulation of shoreline modifications, such as bulkheads and riprap revetments, will be updated as well. New development and land divisions would be required to be located and designed to avoid the need for shoreline stabilization measures. Further, the conservation of shoreline vegetation has been emphasized in the new shoreline regulations for the City to further stabilize shorelands and increase habitat functions. Updated policies

and development standards establish a preference for alternative "soft-shore" erosion control or stabilization designs. In most cases, project applicants would be required to demonstrate why a "soft-shore" design would not provide adequate protection of existing development. Over time these changes will likely have a net beneficial effect on shoreline ecological processes as properties are redeveloped.

The proposed changes to development standards and use regulations are, in general, more protective than the existing SMP. New development would be required to meet standards contained in the CAO and meet the policy intent and development standards of the SMP. As redevelopment occurs, the policies and regulations in the SMP require that development be located and designed in a manner that avoids impacts to ecological functions and/or enhances functions where they have been degraded. For example, the vegetation conservation measures may require that, as part of a redevelopment proposal, non-native or invasive species be replaced with native vegetation.

Changes to the Treatment of Non-conforming Uses

Much of the development in the City of Shoreline along the Puget Sound predates incorporation of the City in 1995. Several properties and developments in the City's shoreline do not conform to current zoning or SMP regulations. The proposed SMP includes regulations that are designed to increase protection of shoreline resources over time by prohibiting redevelopment that would result in a greater degree of non-conformity for existing development.

Under the proposed SMP the following standards apply:

- Structures that were legally established and are used for a conforming use, but which now do not conform with regard to setbacks, buffers or yards, area, bulk, height, or density may continue as long as they do not increase the extent of non-conformity by further encroaching upon or extending into areas where construction or use would not be allowed for new development or uses.
- Uses and developments that were legally established and are nonconforming with regard to the use regulations of the SMP may continue as legal nonconforming uses. Such uses cannot be enlarged or expanded without an approved conditional use permit, except that nonconforming single-family residences that are located landward of the OHWM may be enlarged or expanded in conformance with applicable bulk and dimensional standards by the addition of space to the main structure or by the addition of normal appurtenances.
- Structures that are or have been used for non-conforming uses may be used for a different non-conforming use but only upon the approval of a Shoreline Conditional Use permit.
- If a non-conforming use is discontinued or abandoned for twelve (12) consecutive months the non-conforming rights expire and any subsequent use must comply with the SMP.

Restoration Planning

The draft SMP Restoration Plan (ESA Adolfson, 2009) represents the shoreline restoration element of the SMP. The plan identifies opportunities for restoration activities or efforts that include programmatic opportunities (e.g., investigate a beach nourishment program; reduce overwater structures; protect remaining riparian marine vegetation), site-specific opportunities (such as replacing Boeing Creek culvert with a larger box culvert), regional plans and policies for Puget Sound restoration, and potential funding and partnership opportunities. The SMP's restoration planning is focused on areas where shoreline functions have been degraded by past development activities. The areas with impaired functions were identified in the City's Shoreline Inventory and Characterization. Recognizing that much impairment to shoreline processes and functions are the result of the

railroad tracks along the coast and armoring associated with single-family residences along 27th Avenue NW (both of which are assumed to remain), the implementation of the Restoration Plan will improve shoreline ecological functions incrementally over time.

Beneficial Effects of Any Established Regulatory Programs Under Other Local, State, and Federal Laws

A variety of other regulatory programs, plans, and policies work in concert with the City's SMP to manage shoreline resources and regulate development near the shoreline. The City's Comprehensive Plan establishes the general land use pattern and vision of growth and development the City has adopted for areas both inside and outside the shoreline jurisdiction. Various sections of the Shoreline Municipal Code (SMC) are relevant to shoreline management, such as zoning (SMC Chapter 20.40), stormwater management (SMC Chapter 13.10), and flood damage prevention (SMC 16.12). The City's development standards and use regulations for environmentally critical areas (SMC Chapter 20.80) are particularly relevant to the City's SMP. Designated environmentally critical areas are found throughout the City's shoreline jurisdiction, including geologic hazard areas, wetlands, flood hazard areas, and streams areas. Standards and regulations in the critical areas regulations have been adopted by reference in the proposed SMP.

A number of state and federal agencies may have jurisdiction over land or natural elements in the City's shoreline jurisdiction. Local development proposals most commonly trigger requirements for state or federal permits when they impact wetlands or streams; potentially affect fish and wildlife listed under the federal Endangered Species Act (ESA); result in over one acre of clearing and grading; or affect the floodplain or floodway. As with local requirements, state and federal regulations may apply throughout the city, but regulated resources are common within the City's shoreline jurisdiction. The state and federal regulations affecting shoreline-related resources include, but are not limited to:

Endangered Species Act (ESA): The federal ESA addresses the protection and recovery of federally listed species. The ESA is jointly administered by the National Oceanic and Atmospheric Administration (NOAA) Fisheries (formerly referred to as the National Marine Fisheries Service), and the United States Fish and Wildlife Service (USFWS).

Clean Water Act (CWA): The federal CWA requires states to set standards for the protection of water quality for various parameters, and it regulates excavation and dredging in waters of the U.S., including wetlands. Certain activities (i.e., fill or dredge) affecting wetlands in the City's shoreline jurisdiction or work waterward of the ordinary high water mark in the Puget Sound or streams may require a permit from the U.S. Army Corps of Engineers and/or Washington State Department of Ecology under Section 404 and Section 401 of the CWA, respectively.

Hydraulic Project Approval (HPA): The Washington Department of Fish and Wildlife (WDFW) regulates activities that use, divert, obstruct, or change the natural flow of the beds or banks of waters of the state and may affect fish habitat. Projects in the shoreline jurisdiction requiring construction below the ordinary high water mark of Puget Sound or streams in the city could require an HPA from WDFW. Projects creating new impervious surface that could substantially increase stormwater runoff to waters of the state may also require approval.

National Pollutant Discharge Elimination System (NPDES): Ecology regulates activities that result in wastewater discharges to surface water from industrial facilities or municipal wastewater treatment plants. NPDES permits are also required for stormwater discharges from industrial facilities, construction sites of one or more acres, and

municipal stormwater systems that serve census-defined Urbanized Areas, which include any urbanized areas with more than 50,000 people and densities greater than 1,000 people per square mile.

Conclusion

This draft cumulative impacts analysis is based upon the Draft Shoreline SMP dated February 2012 (received by ESA on February 21, 2012). The City of Shoreline's Puget Sound coastline is largely developed. There are nearly no major opportunities for new development within the shoreline jurisdiction in the City limits. Therefore, change within the shoreline will primarily be the result of redevelopment activities with the Point Wells site expected to be the most extensive. The system of shoreline environment designations and use regulations in the proposed SMP is consistent with the established land use pattern, as well as the land use vision planned for in the City's comprehensive plan, zoning, and other long-range planning documents. Based on this consistency, it is unlikely that substantial changes in shoreline land uses will occur within the City limits in the future. However, should the Point Wells site be annexed into the City of Shoreline, substantial changes in shoreline land use could occur on this specific site.

The proposed SMP provides a new system of shoreline environment designations that establishes more uniform management of the City's shoreline. The updated development standards and regulation of shoreline modifications provides more protection for shoreline processes. The updated standards and regulations are more restrictive of activities that would result in adverse impacts to the shoreline environment. The restoration planning effort outlined in the proposed SMP provides the City with opportunities to improve or restore ecological functions that have been impaired as a result of past development activities. In addition, the proposed SMP is meant to compliment several city, state and federal efforts to protect shoreline functions and values.

The cumulative actions taken over time in accordance with the City of Shoreline's proposed SMP are not likely to result in a net loss of shoreline ecological functions from existing baseline conditions. This conclusion is based on an assessment of the three factors identified in the Ecology guidelines for evaluating cumulative impacts:

- Current circumstances affecting the shorelines and relevant natural processes;
- Reasonably foreseeable future development and use of the shoreline; and
- Beneficial effects of any established regulatory programs under other local, state, and federal laws.

Changes in subsequent drafts of the SMP may result in a need for revisions to the cumulative impact analysis.

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General Cumulative Impact Analysis

Shoreline Segment & Existing Condition	Likely Future Development	Functions or Processes Potentially Impacted	Effects of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
Point Wells Urban					
Includes the northern portion of Segment A This area is in the City's Potential Annexation Area (PAA) and includes the Point Wells industrial port, a petroleum products storage, processing and distribution site.	Snohomish County, in response to a petition from the Point Wells property owner, changed the Comprehensive Plan designation and zoning designation of Point Wells from Urban Industrial to Urban Center. Urban Center allows for a mix of high-density residential, office and retail uses. The City of Shoreline has a Comprehensive Plan designation of Mixed Use, which is intended to encourage the development of pedestrian oriented places, with architectural interest, that integrate a wide variety of retail, office and service uses with residential uses. It seems likely that the property would redevelop based on the recent changes to designations.	**Segment A:** The portion of Segment A located within Point Well Urban is completely developed. All shoreline functions are considered low, except that eelgrass is mapped off-shore which provides spawning habitat for forage fish. The shoreline is modified with overwater structures and hard armoring. Shoreline functions would remain at low performance levels and would continue to be impaired unless redevelopment occurs. Soil and groundwater contamination would be remediated and the nearshore habitat would be restored as mitigation for the redevelopment.	**20.230.080:** The purpose of the "Point Wells Urban" environment is to accommodate higher density uses while protecting existing ecological functions and restoring ecological functions that have been degraded. **SMP regulations and standards include:** **Table 20.230.082:** A 50-foot vegetation conservation area with restoration is required for development in the Point Wells Urban environment. The term "Native Conservation Area" (NVCA) applies to areas where the shoreline is not armored, such as the PWUC environment designation, and Richmond Beach Saltwater Park. NVCAs should be maintained in a predominantly natural, undisturbed, undeveloped, and vegetated condition, except where necessary to accommodate appurtenances to a permitted water-dependent use. The term "Building Setback" applies in areas where the railroad or bulkheads prohibit natural sediment transfer. In those areas, it is necessary to maintain hard-armored conditions, but further encroachment or vegetative clearing are not permitted. **20.230.020.A:** Development must: • apply the mitigation sequence in WAC 173-26-201(2)(e) • ensure no net loss of shoreline ecological functions by being consistent with SMC 20.80 Critical Areas, avoiding or minimizing the need for shoreline stabilization, substantial land disturbance and dredging, and minimizing interference with natural shorelines processes **20.230.020.B:** Development that alters topography may be approved if: • Flood events will not increase in frequency or severity • Alteration would not impact natural habitat forming processes and would not reduce ecological functions **20.230.020.C:** Alternatives to the use of chemical fertilizers, herbicide and pesticides is the preferred BMP. Vehicle refueling and vehicle maintenance must occur outside of regulated shoreline areas. The bulk storage of oil, fuel, chemicals or other hazardous materials is prohibited except for uses allowed by the zoning classification. **20.230.040.B:** Public access on or over the water must be constructed as far landward as possible to avoid interference with views. Physical public access must be designed to prevent significant impacts to natural systems employing LID techniques. **Table 20.230.081:** Boating facilities including boat launch ramps open to the public are permitted uses. Marinas are prohibited uses. Breakwaters, jetties, groins and weirs are conditionally permitted provided they are limited to water-dependent, public access or shoreline stabilization activities. Existing piers and docks associated with industrial use and public piers and docks are permitted. Expansion of existing piers and docks associated with water-oriented industrial use is conditionally permitted. **20.230.090B:** Boating facilities are allowed only if they do not adversely impact fish or wildlife habitat areas and associated wetlands and there is adequate mitigation to ensure no net loss. **20.230.090C:** Boat launch ramps must be located on stable shorelines where water depth is adequate to eliminate/minimize need for channel maintenance activities. Boat launch ramps are allowed on stable non-eroding banks where need for shore stabilization structures is minimized. Ramp structures must be placed near flush with foreshore slope to minimize interruption of geohydraulic processes. **20.230.090D:** Dry boat storage must comply with the required setback except that water-dependent components are allowed within the setback. **20.230.095**: Groins are permitted in conjunction with a professionally designed public beach management program. Jetties and breakwaters are permitted as an integral component of a professionally designed harbor or port. Floating, portable or submerged breakwater structures, or smaller discontinuous structures are preferred where physical conditions make such alternatives with	**City's Surface Water Management Program:** Shoreline development must be designed in conformance with the current DOE Storm Water Management Manual (urban environments only) and Chapter 20.60, subchapter 3 of the SMC and the City of Shoreline Surface Water Design Code **Critical Areas Regulations:** Chapter 20.80 of the Shoreline Municipal Code (Critical Areas) establishes development standards, construction techniques, and permitted uses in critical areas and their buffers (i.e., geologic hazard areas, fish and wildlife habitat conservation areas, wetlands, flood hazard areas, aquifer recharge areas, and stream areas) to protect these areas from adverse impacts. Designated critical areas are found throughout the City's shoreline planning area, particularly wetlands and streams, flood hazard areas, and geologic hazard areas **Clean Water Act (CWA):** The federal CWA requires states to set standards for the protection of water quality for various parameters, and it regulates excavation and dredging in waters of the U.S., including wetlands. Certain activities affecting wetlands in the City's shoreline jurisdiction or work in the Puget Sound waters may require a permit from the U.S. Army Corps of Engineers and/or Washington State Department of Ecology under Section 404 and Section 401 of the CWA, respectively. **Hydraulic Project Approval (HPA):** The Washington Department of Fish and Wildlife (WDFW) regulates activities that use, divert, obstruct, or change the natural flow of the beds or banks of waters of the state and may affect fish habitat. Projects in the shoreline jurisdiction requiring construction below the ordinary high water mark of Puget Sound or stream mouths in the city could require an HPA from WDFW. Projects creating new impervious surface that could substantially increase stormwater runoff to waters of the state may also require approval. **Over-water structures:** Any in- or over-water (including wetlands) proposals would require review not only by the City, but also by the Washington Department of Fish and Wildlife (WDFW), the U.S. Army Corps of Engineers (Corps), and/or the Washington Department of Ecology. Each of these agencies is charged with regulating and/or protecting streams and wetlands, and would impose certain design or mitigation requirements on applicants. A project that includes stream or wetland fill would require Corps review and permitting.	**No Change** Native Vegetation Conservation Areas are limited to areas that are not currently armored. Therefore, Building Setback applies to most areas within the city. Given the extent of armoring associated with the railroad, most impacts to existing vegetation are expected to be limited to railroad-related activities. However, such activities must comply with policies in the SMP that conserve vegetation in a manner that ensures no net loss.

Shoreline Segment & Existing Condition	Likely Future Development	Functions or Processes Potentially Impacted	Effects of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
			less impact feasible. **Table 20.230.081:** Nonresidential development is permitted. Existing industrial development is permitted while expansion is conditionally permitted. **20.230.100:** Over-water construction of nonresidential uses is prohibited, with the exception of boat facilities. Water-dependent, nonresidential development must maintain a shoreline setback of either 25 feet from the OHWM or 10 feet from the edge of the base flood elevation, whichever is greater. If public access is provided to the shoreline, the setback may be reduced to 10 feet from the OHWM or the edge of the base flood elevation, whichever is greater. Nonwater-dependent, nonresidential development shall maintain a minimum setback from the OHWM consistent with Table 20.230.082. **Table 20.230.081**: In-stream structures are permitted as part of fish habitat enhancement or a watershed restoration project. **20.230.110** B: Existing natural in-stream features are to remain in place. New structures must allow for normal ground water movement and surface runoff. **Table 20.230.081**: Recreational facilities are a permitted use. **20.230.130:** No recreational buildings or structures can be built waterward of the OHWM, except water-dependent and/or water-enjoyment public structures such as bridges and viewing platforms. Such uses may be permitted as a Shoreline Conditional Use. **Table 20.230.081:** Residential development is a permitted use. **20.230.160B:** Residential development is prohibited waterward of the OHWM and within setbacks defined for each shoreline environment designation. Residential development must assure no net loss of shoreline ecological functions. Residential development will not be approved if a geotechnical analysis indicates that flood control or shoreline protection measures are necessary to create a residential lot or site area. Development must be located to avoid the need for structural shore defense and flood protection works. Residential units must be clustered in order to avoid impacts to wetlands or other critical areas. One accessory structure is allowed in the vegetation conservation area provided that structures cover no more than 200 square feet. **Table 20.230.081:** Dredging is permitted for activities associated with shoreline/aquatic restoration, remediation, and navigation. , Dredge spoil disposal is permitted for shoreline habitat and natural systems enhancement, fish habitat enhancement, and watershed restoration projects. **20.230.160.B:** Dredging/disposal allowed only when actions will not result in significant damage to water quality, biological elements, circulation patterns, floodwater capacity, and properly functioning conditions for threatened / endangered species. Depositing dredge spoil material in the Puget Sound allowed as a CUP for wildlife habitat improvements and correcting problems of material distribution that affect fish resources. **Table 20.230.081:** Existing piers and docks associated with industrial use and public piers or docks are permitted. Expansion of existing piers or docks associated with water-oriented industrial use are conditionally permitted. **20.230.170:** Piers and docks must include mitigation to ensure no net loss to critical saltwater habitat. Width of docks, piers, floats and lifts must be no wider than 6 feet unless authorized by WDFW and USACE. The length of docks and piers must be the minimum necessary to prevent grounding of floats and boats on the substrate during low tide. Decking shall have a minimum open space of 40% and after installation at least 60% ambient light beneath the structure shall be maintained. **20.230.175:** Repair or replacement of 50% or more of an existing over-water deck structure must include the replacement of the entire decking with grated material to achieve a minimum open space of 40% and must result in at least 60% ambient light beneath the structure. Repair or replacement of	**Restoration Plan (2009):** The restoration plans identifies a restoration opportunity in Point Wells that would completely remove the sea wall, riprap dike, and fill, regrade the site and reconnect local freshwater sources to re-create a tidal lagoon system with an opening at the north end of the point, and reestablish native riparian and backshore vegetation. Such actions would improve sediment transport and deposition, nearshore habitat forming processes, beach erosion and accretion of sediments and mineral particulate material, and intertidal fish and wildlife habitat.	

Shoreline Segment & Existing Condition	Likely Future Development	Functions or Processes Potentially Impacted	Effects of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
			less than 50% of the over-water deck structure must use grated decking in the area to be replaced. **Table 20.230.081:** New hard shoreline armoring is conditionally permitted. Soft-shore stabilization and maintenance of existing is permitted. **20.230.180B:** New bulkheads allowed when there is serious erosion threatening an established use or existing primary use or when they are necessary for the operation and location of a water-oriented use. A new bulkhead can be constructed to retain landfill in conjunction with a water-dependent use, bridge/navigational structure, or for a wildlife/fish enhancement project. Bulkheads must use stable, nonerodable, homogeneous materials such as concrete, wood, and rock that are consistent with the preservation and protection of ecological habitat. **Table 20.230.081:** Land Disturbing activities and landfill are permitted for activities associated with restoration or remediation, public access improvement, and allowed shoreline development. Landfilling waterward of the OHWM is conditionally permitted for activities associated with shoreline/aquatic restoration or remediation. **20.230.200.B:** Land disturbing activities limited to minimum necessary for intended development. Tree and vegetation removal in required Native Vegetation Conservation Areas is prohibited. All significant trees in the Native Vegetation Conservation Areas shall be designated as protected trees consistent with existing development code standards (SMC 20.50.340) and removal of hazard trees is regulated pursuant to SMC 20.50.310(A)(1). Extensive land clearing that requires a permit must revegetate, irrigate, and establish erosion and sedimentation control. **20.230.210.B:** Landfill is allowed as a CUP for: • Water-dependent use • Bridge/utility/navigational structure Landfill perimeters must be designed with silt curtains, vegetation retaining walls or other methods to prevent material movement.		
Point Wells Urban Conservancy					
Includes the southern portion of Segment A This area is in the City's Potential Annexation Area (PAA) and includes the Point Wells industrial port, a petroleum products storage, processing and distribution site.	As described under Point Wells Urban, the Point Wells property owner has indicated interest in redevelopment by petitioning a change to the Snohomish County Comprehensive Plan and zoning designations. However, this portion of segment A retains its Urban Industrial designation.	Similar to conditions described under Point Wells Urban, this property has been extensively modified. However, due to the lack of overwater structures, the presence of Lost Creek, and no hard armoring, some shoreline functions are present. The shoreline contains eelgrass meadows and kelp forests, forage fish spawning area, 31 species of shellfish, a sand and gravel flat, and habitat for shorebirds. Lost Creek provides for pocket estuary habitat. No change in shoreline functions is expected unless redevelopment occurs. Soil and groundwater contamination would be remediated and the nearshore habitat would be restored as mitigation for the redevelopment. A change to a higher land-use intensity and increased public access would likely disrupt wildlife and shore bird habitat.	**20.230.080:** The purpose of the "Point Wells Urban Conservancy" environment is to distinguish between differing levels of potential and existing ecological function within the Point Wells environment, and regulate uses and public access requirements appropriately. **SMP regulations and standards include:** **Table 20.230.082:** A 115-foot vegetation conservation area is required for development in the Point Wells Urban Conservancy environment. The term "Native Conservation Area" (NVCA) applies to areas where the shoreline is not armored, such as the PWUC environment designation, and Richmond Beach Saltwater Park. NVCAs should be maintained in a predominantly natural, undisturbed, undeveloped, and vegetated condition, except where necessary to accommodate appurtenances to a permitted water-dependent use. The term "Building Setback" applies in areas where the railroad or bulkheads prohibit natural sediment transfer. In those areas, it is necessary to maintain hard-armored conditions, but further encroachment or vegetative clearing are not permitted. The same regulations under 20.230.020, 20.230.030, and 20.230.040 for Point Wells Urban apply to Point Wells Urban Conservancy as well. **Table 20.230.081:** In addition to uses and modifications prohibited in Point Wells Urban, boating facilities, breakwaters, jetties, groins and weirs, piers and docks, and new hard shoreline armoring, are also prohibited. **20.230.090-20.230.270:** The regulations for nonresidential development, in-stream structures, recreational facilities, residential development, dredging, dredge material disposal, land disturbing activities, and landfilling for Point Wells Urban apply to Point Wells Urban Conservancy as well with the exception that recreational facilities are limited to low-intensity uses and passive uses and soft-shore stabilization is limited to those associated with utilities .	Same as items above in Point Wells Urban. **Restoration Plan (2009):** The restoration plans identifies a restoration opportunity in Point Wells that would enhance the shoreline by removing riprap dike, eliminate invasive plants, reestablish native riparian and backshore vegetation, and create a three acre intertidal lagoon. Similar to the restoration opportunity for Point Wells Urban, such actions would improve sediment transport and deposition, nearshore habitat forming processes, beach erosion and accretion of sediments and mineral particulate material, and intertidal fish and wildlife habitat.	**No Change** Native Vegetation Conservation Areas are limited to areas that are not currently armored. Therefore, Building Setback applies to most areas within the city. Given the extent of armoring associated with the railroad, most impacts to existing vegetation are expected to be limited to railroad-related activities. However, such activities must comply with policies in the SMP that conserve vegetation in a manner that ensures no net loss.

Shoreline Segment & Existing Condition	Likely Future Development	Functions or Processes Potentially Impacted	Effects of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
Urban Conservancy					
Includes the northern portion of Segment B, portion of Segment C that is Richmond Beach Saltwater Park, and Segment E. This area is characterized by several parks, public and private greenways, the Highlands residential neighborhood, and the Burlington Northern Santa Fe (BNSF) railroad right-of-way (ROW).	Future development would likely be limited to redevelopment of existing single-family homes, few new residences, and park development. Development is inhibited by the presence of the BNSF ROW, landslide hazard areas, and streams and their associated greenways.	Shoreline functions within this area are low to moderate, with the following functions moderately intact: ▪ Northern portion of Segment B has eelgrass meadows and kelp forests, a sand flat, forage fish spawning area, and a forested wetland at Barnacle Creek. The wetland provides some filtering of pollutants; however, it is narrow and east of the railroad grade. ▪ Richmond Beach Saltwater Park in Segment C provides some sediment transport function, attenuates wave energy although it is limited due to its length (alongshore) and narrow width, has some potential for large woody debris recruitment, and some vegetation, although it does not overhang the intertidal zone. Eelgrass meadows and kelp forests, forage fish spawning area, and 37 species of shellfish are present. ▪ Segment E contains eelgrass meadows and kelp forests, a sand flat, and the Boeing Creek outlet which serves as an important area for feeding, migration, spawning, and rearing of forage fish. Although the shoreline is modified by the BNSF railroad tracks, riparian vegetation is prevalent upslope of the tracks throughout the entire length of Segment E. This segment is also characterized by landslide hazard areas and has recently seen numerous slide activities. Because no significant new development is anticipated, new impacts are anticipated to be limited.	**20.230.080:** The purpose of the "Urban Conservancy" environment is to protect, restore and manage relatively undeveloped or unaltered shorelines to maintain open space, floodplains or habitat, while allowing a variety of compatible uses. **SMP regulations and standards include:** **Table 20.230.082:** A 150-foot or 50-foot from the top of a landslide hazard area, whichever is greater, vegetation conservation area is required for development in the Urban Conservancy environment. The term "Native Conservation Area" (NVCA) applies to areas where the shoreline is not armored, such as the PWUC environment designation, and Richmond Beach Saltwater Park. NVCAs should be maintained in a predominantly natural, undisturbed, undeveloped, and vegetated condition, except where necessary to accommodate appurtenances to a permitted water-dependent use. The term "Building Setback" applies in areas where the railroad or bulkheads prohibit natural sediment transfer. In those areas, it is necessary to maintain hard-armored conditions, but further encroachment or vegetative clearing are not permitted. The same regulations under 20.230.020, 20.230.030 and 20.230.040 for Point Wells Urban apply to Urban Conservancy as well. In addition, 20.230.020D requires properties located in the UC designation to retain trees that are 12 inches or more in diameter. Trees determined by a certified arborist to be hazardous or diseased may be removed. When healthy or non-hazardous trees are removed, each removed tree must be replaced with at least three (3) six-foot tall trees, one (1) 18-foot tall tree, or one (1) 12-foot plus one (1) six-foot tall tree. Trees must be of the same species removed, or equivalent native tree species. **Table 20.230.081:**In addition to uses and modifications prohibited in Point Wells Urban, breakwaters, jetties, groins and weirs, nonresidential development, and industrial development are also prohibited. **20.230.090-20.230.270:** The regulations for boat launching ramps, in-stream structures, recreational facilities, residential development, dredging, dredge material disposal, piers and docks, bulkheads, land disturbing activities, and landfilling for Point Wells Urban apply to Urban Conservancy as well, with the exception that only public piers and docks are allowed in Urban Conservancy.	Same as items above in Point Wells Urban. **Restoration Plan (2009):** The restoration plan identifies a restoration opportunity that would replace all stream culverts with larger box culverts or other fish-friendly structures to allow fish access during low flows and allow opportunity for more sediment to reach the nearshore. Such actions would improve nearshore habitat forming processes and intertidal fish and wildlife habitat. A second restoration opportunity would be to create tidally influenced wetland or restore wetland habitat on the east side of the BNSF railroad tracks NW of the pump station. Such actions would improve nearshore habitat forming processes, intertidal fish and wildlife habitat, and hydrologic, hyporheic and water quality functions. A third restoration opportunity would be to implement the Richmond Beach Saltwater Park Vegetation Management Plan to remove non-native invasive plants and reestablish native plant communities within wetlands east of railroad and on beach area west of railroad. Such actions would improve freshwater wetland and intertidal wildlife habitat and stabilize beach substrates. A fourth restoration opportunity would be to protect intact wetlands and their associated uplands adjacent to Puget Sound and develop and implement a vegetation management plan for the Innis Arden Reserve. Such actions would improve nearshore habitat forming processes, hydrologic, hyporheic and water quality functions, riparian habitat structure and function, and fish and wildlife habitat. A fifth restoration opportunity would be to reduce stormwater flow down steep slopes along Boeing Creek to stabilize banks and control sediment loading of the stream and extend recommendations of Vegetation Management Plan for Boeing Creek Park to include entire stream corridor downslope to Puget Sound. Such actions would improve exchange of aquatic organisms, sediment delivery to nearshore from fluvial sources, source of detritus and particulate organic matter, riparian habitat structure and function, freshwater input, and fish and wildlife habitat. A sixth restoration opportunity would be to protect intact uplands and native vegetation communities adjacent to Puget Sound along Boeing Creek Reserve. Such actions would improve source of detritus and particulate organic matter, riparian habitat structure and function, and fish and wildlife habitat.	**No Change** Native Vegetation Conservation Areas are limited to areas that are not currently armored. Therefore, Building Setback applies to most areas within the city. Given the extent of armoring associated with the railroad, most impacts to existing vegetation are expected to be limited to railroad-related activities. However, such activities must comply with policies in the SMP that conserve vegetation in a manner that ensures no net loss.

Shoreline Segment & Existing Condition	Likely Future Development	Functions or Processes Potentially Impacted	Effects of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
Waterfront Residential					
Includes the southern portion of Segment B, where the Richmond Beach residential neighborhood is located waterward of the BNSF ROW.	Future development would likely be limited to redevelopment of existing single-family homes and one or two new residences. Development is inhibited by shallow lots and limited vehicular access. Bulkheads likely to be maintained and replaced due to severe weather storms.	Shoreline functions are low in this portion of the Segment B. The bulkheads, some of which are below the mean high tide level, interrupt longshore transport of sediment, increase wave energy, and preclude the use of nearshore habitat for resting and foraging. Vegetation is limited to ornamental landscaping, including lawn areas. Because no significant new development is anticipated, new impacts are anticipated to be limited.	**20.230.080:** The purpose of the "Waterfront Residential" environment is to distinguish between the residential portions of the coastline where natural and manmade features preclude building within the shoreline jurisdiction and the section along 27th Avenue NW where residential properties directly abut the Puget Sound. **SMP regulations and standards include:** **Table 20.230.082:** A 20-foot vegetation conservation area is required for development in the Waterfront Residential environment. The term "Native Conservation Area" (NVCA) applies to areas where the shoreline is not armored, such as the PWUC environment designation, and Richmond Beach Saltwater Park. NVCAs should be maintained in a predominantly natural, undisturbed, undeveloped, and vegetated condition, except where necessary to accommodate appurtenances to a permitted water-dependent use. The term "Building Setback" applies in areas where the railroad or bulkheads prohibit natural sediment transfer. In those areas, it is necessary to maintain hard-armored conditions, but further encroachment or vegetative clearing are not permitted. The same regulations under 20.230.020, 20.230.030 and 20.230.040 for Point Wells Urban apply to Waterfront Residential as well. **Table 20.230.081:** In addition to uses and modifications prohibited in Point Wells Urban, nonresidential development, industrial development, and breakwaters, jetties, groins and weirs are prohibited. **20.230.090-20.230.270:** The regulations for boat launching ramps, in-stream structures, recreational facilities, residential development, dredging, dredge material disposal, piers and docks, bulkheads, land disturbing activities, and landfilling for Point Wells Urban apply to Waterfront Residential as well, with the following exceptions: • only joint-use boat launching ramps and joint-use piers and docks are allowed in Waterfront Residential; and • landfill in Waterfront Residential does not have to be limited to activities associated with restoration or remediation or public access improvement, but must still be associated with allowed shoreline development per 20.230.210B.	Same as items above in Point Wells Urban. **Restoration Plan (2009):** The restoration plans identifies restoration opportunities that while residences are present, would protect intertidal area by limiting additional traditional bulkheads or overwater structures and reduce impact of shore armoring through replacement of existing traditional bulkheads with soft-shore alternatives, except where they are necessary to protect property from high energy systems. Such actions would improve sediment transport and deposition, nearshore habitat forming processes, beach erosion and accretion of sediments and mineral particulate material, and intertidal fish and wildlife habitat.	**No Change** Native Vegetation Conservation Areas are limited to areas that are not currently armored. Therefore, Building Setback applies to most areas within the city. Given the extent of armoring associated with the railroad, most impacts to existing vegetation are expected to be limited to railroad-related activities. However, such activities must comply with policies in the SMP that conserve vegetation in a manner that ensures no net loss.
Shoreline Residential					
Includes the southern portion of Segment B, where the Richmond Beach residential neighborhood is located landward of the BNSF ROW.	Future development would likely be limited to redevelopment of existing single-family homes and few new residences. Development is inhibited by the presence of the BNSF ROW.	Shoreline functions are low in this portion of the segment due to the presence of the BNSF ROW and limited upland vegetation. Because no significant new development is anticipated, new impacts are anticipated to be limited.	**20.230.080:** The purpose of the "Shoreline Residential" environment is to accommodate residential development and accessory structures that are consistent with this Shoreline Master Program. SMP regulations and standards include: **Table 20.230.082:** A 115-foot vegetation conservation area is required for development in the Shoreline Residential environment. The term "Native Conservation Area" (NVCA) applies to areas where the shoreline is not armored, such as the PWUC environment designation, and Richmond Beach Saltwater Park. NVCAs should be maintained in a predominantly natural, undisturbed, undeveloped, and vegetated condition, except where necessary to accommodate appurtenances to a permitted water-dependent use. The term "Building Setback" applies in areas where the railroad or bulkheads prohibit natural sediment transfer. In those areas, it is necessary to maintain hard-armored conditions, but further encroachment or vegetative clearing are not permitted. The same regulations under 20.230.020, 20.230.030 and 20.230.040 for Point Wells Urban apply to Shoreline Residential as well. **Table 20.230.081:** In addition to uses and modifications prohibited in Point Wells Urban, nonresidential development, industrial development, and breakwaters, jetties, groins and weirs are prohibited. **20.230.090-20.230.270:** The regulations for boat launching ramps, in-stream structures, recreational facilities, residential development, dredging, dredge material disposal, piers and docks, bulkheads, land disturbing activities, and landfilling for Point Wells Urban apply to Shoreline Residential as well, with the following exceptions: • only joint-use launching ramps and joint-use piers and docks are allowed in Waterfront Residential; and • landfill in Shoreline Residential does not have to be limited to activities associated with restoration or remediation or but must still be associated with allowed shoreline development	Same as items above in Point Wells Urban. **Restoration Plan (2009):** The restoration plan identifies restoration opportunities that would replace all stream culverts with larger box culverts or other fish-friendly structures to allow fish access during low flows and allow opportunity for more sediment to reach the nearshore. Such actions would improve nearshore habitat forming processes and intertidal fish and wildlife habitat.	**No Change** Native Vegetation Conservation Areas are limited to areas that are not currently armored. Therefore, Building Setback applies to most areas within the city. Given the extent of armoring associated with the railroad, most impacts to existing vegetation are expected to be limited to railroad-related activities. However, such activities must comply with policies in the SMP that conserve vegetation in a manner that ensures no net loss.

Shoreline Segment & Existing Condition	Likely Future Development	Functions or Processes Potentially Impacted	Effects of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
			per 20.230.210B.		
Aquatic					
Includes all lands waterward of the marine ordinary high-water mark in the City of Shoreline. Areas designated Aquatic in the City of Shoreline are all areas within the tidal waters and open waters of the Puget Sound. The only area that has overwater structures is in Segment A, associated with the Point Wells development.	Hard armoring is expected to be maintained for the BNSF railroad ROW and the residential bulkheads located along Richmond Beach. New hard armoring could occur in Segment A although soft-shore stabilization methods would likely be utilized as mitigation for redevelopment. New overwater structures may occur at publicly owned properties, such as Richmond Beach Saltwater Park or in Segment A as part of redevelopment. Dredging may occur in Segment A but only as part of shoreline or aquatic restoration or remediation.	Existing functions and processes have been characterized above. Impacts are anticipated to be limited since no new significant development is anticipated. Any impacts would have to be mitigated.	**20.230.080:** The purpose of the "Aquatic" environment is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the ordinary high-water mark. **SMP regulations and standards include:** The same provisions under 20.230.020, 20.230.030 and 20.230.040 for Point Wells Urban apply to Aquatic as well. **Table 20.230.081:** Most allowed uses and modifications in this environment must meet the use and permit limitations of the upland designation. In addition to uses and modifications prohibited in Point Wells Urban, nonresidential development, industrial development, residential development, hard shoreline armoring, and land disturbing activities are prohibited. **20.230.090-20.230.270:** The regulations for boating facilities, breakwaters, jetties, groins and weirs, in-stream structures, recreational facilities, dredging, dredge material disposal, piers and docks and landfilling for Point Wells Urban apply to Aquatic as well, with the following exceptions: • recreational facilities are limited to water-dependent and water-enjoyment and are conditionally permitted; • landfilling is limited to activities associated with shoreline or aquatic restoration or remediation and is conditionally permitted; and • piers and docks are only limited to the extent of the use and permit requirements of the upland designation. **Table 20.230.081:** Transportation facilities (railroads) are allowed. **20.230.250**: Bridge abutments and necessary approach fills must be located landward of the OHWM, except bridge piers may be permitted in a water body as a Shoreline Conditional Use. Landfilling activities for transportation facilities are prohibited in wetlands and on accretion beaches, except when all structural and upland alternatives have proven infeasible. Shoreline transportation facilities shall be located and designed to avoid steep or unstable areas and fit the existing topography in order to minimize cuts and fills. **Table 20.230.081:** Aquaculture is a conditionally permitted use. **20.230.115:** Aquaculture is limited to geoduck harvesting within DNR tracts or for recovery of native aquatic population in accordance with a government and/or tribal approved plan.	Same as items above in Point Wells Urban. **Restoration Plan (2009):** The restoration plans identifies a restoration opportunity in Point Wells (Segment A) that would remove creosote pilings and in-water debris. Such actions would improve water and sediment quality and intertidal fish and wildlife habitat. A second restoration opportunity would be to protect forage fish spawning, rearing, migration, and feeding areas and protect eelgrass beds and kelp beds. Such actions would improve food web support and intertidal fish and wildlife habitat. A third restoration opportunity would be to explore the potential to restore the connection between feeder bluffs and nearshore areas. Such actions would improve sediment delivery to the nearshore.	**No Change or Potential Improvement** Substantial development is currently limited to Segment A in the aquatic environment. Any future in-water work would likely be associated with the Richmond Beach Saltwater Park and Point Wells. Any of these developments would have to mitigate impacts to ecological functions and achieve project-specific no net loss. Redevelopment would require replacement with improved materials, and compliance with Critical Areas and Stormwater Regulations, HPA, and federal CWA. Improved stormwater management and bulkhead removal / improvement projects would also improve functions overtime.