



MEMORANDUM

To: Planning Commission

From: Stacy Clauson, Contract Planner
Teresa Swan, Senior Planner
Paul Stewart, Deputy Director of Planning

Date: December 3, 2008

Subject: Kirkland's Shoreline Master Program Update (SMP)
File No. ZON06-00017

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I. RECOMMENDATION

- Per request from Planning Commission member, review and provide direction on concept options for shoreline restoration (see Section III, starting on page 3).
- Continue discussion from November 20, 2008 meeting on shoreline setbacks (see Section IV starting on page 16).
- Review and provide direction on general regulations, shoreline use and shoreline modifications provisions not yet reviewed by the Planning Commission (see Section VI starting on page 24).

II. INTRODUCTION

- A. Recommended Agenda.** On November 20, 2008 the Commission continued its review of initial drafts of the regulations associated with the Shoreline Master Program. The key topics reviewed included shoreline stabilization and shoreline setbacks. For the December 11, 2008 meeting, staff would recommend reviewing the following:
- 1. Shoreline Restoration Opportunities.** A member of the Planning Commission has requested that the Planning Commission discuss the conceptual policy options for shoreline restoration that were included in Section IV of the November 20th packet, starting on page 8. At the meeting, staff presented a series of options for Setbacks (Item V) that focused on using Concept 3 (Native Planting) and Concept 4 (Incentives) from Section IV.D. There has been interest in further discussing the viability of the other options presented in this Section IV.D, in particular Concept 1. The information presented in the November 20, 2008 packet has been carried forward in Section III of this memo, together with additional requested information, so that the Planning Commission can discuss this topic.
 - 2. Shoreline setbacks.** Staff recommends that the Planning Commission continue working through the issues related to **shoreline setbacks**, including: 1) further refinement of Concept 3 and 4 for the Residential – L environment, which includes concepts for setback standards, provisions for some limited additions to nonconforming structures, vegetation standards, setback reduction provisions, and nonconforming landscaping standards; and 2) review of the setback options for the remaining zones.
 - 3. Other regulations.** In addition, with any remaining available time, staff would propose reviewing the following provisions which have been previously brought forward for Planning Commission review, but which the Planning Commission has not had an opportunity to discuss.
- B. What is the City’s goal in this SMP update?** One of the Planning Commissioners has recommended an overview of the City’s goals of the SMP Update. In the initial stages of the SMP process, the Planning Commission worked to established the following overarching principles to guide development of the SMP update:
- Enable current and future generations to enjoy an attractive, healthy and safe waterfront.
 - Protect the quality of water and shoreline natural resources to preserve fish and wildlife and their habitats.
 - Protect the City’s investments as well as those of property owners along and near the shoreline.
 - Produce an updated Shoreline Master Program (SMP) that is supported by Kirkland’s elected officials, citizens, property owners and businesses, the State of Washington, and other key groups with an interest in the shoreline.
 - Efficiently achieve the SMP mandates of the State.

These are important principles to keep in mind as we move forward with discussion of the issues on tonight's agenda.

III. ADDRESSING INDIVIDUAL AND CUMULATIVE IMPACTS AND SHORELINE RESTORATION

- A. Purpose.** With the updated regulations we need to address several different objectives, including the following:
 - 1. Achieving new State requirements for no net loss.
 - 2. Improving shoreline ecological functions to enhance habitat for salmon.
- B. State Requirements.** One of the key issues that the City will need to evaluate as part of the SMP Update is the **no net loss** standard established by the State. Simply stated, the no net loss standard is designed to halt the introduction of new impacts to shoreline ecological functions resulting from planned for and permitted new development (including exempt development). This means that through implementation of the updated SMP, the **existing condition of shoreline ecological functions must remain the same or be improved over time.**

WAC 173-26-186 *Governing principles of the guidelines*, provides a mandate in (8)(d) to evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions and other shoreline functions fostered by the policy goals of the Shoreline Management Act. To ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs need to contain policies, programs, and regulations that **address adverse cumulative impacts** and **fairly allocate the responsibility of addressing cumulative impacts.**

Restoration of impaired ecological functions is appropriate to include in the evaluation of cumulative impacts in the context of no net loss to help offset impacts introduced from new planned shoreline development allowed in the updated SMP. Restoration in this sense is used as a mitigation technique to offset impacts from new development. The State does not provide specific guidance on how and to what extent to include restoration, but rather leaves these issues to individual jurisdictions to resolve as they complete their no net loss assessment.

What does this mean for Kirkland? While Kirkland is highly developed, it does have potential for new development and redevelopment at increased intensity (e.g. a larger residence with more lot coverage or built closer to the lake, longer piers to provide access to deeper waters, etc.). Further, for those properties without existing docks or bulkheads, the property owners may seek to add these shoreline modifications to their property. These uses and developments are likely to introduce new impacts that affect our ability to maintain or improve the shoreline over time. While updated standards can be framed in a way that tries to minimize impacts, there will still be adverse impacts resulting from new development and redevelopment that needs to be mitigated. In order to offset these adverse impacts, our standards need to identify appropriate opportunities to enhance existing functions.

The more flexible our standards for new or redevelopment are compared to our existing conditions, the more that needs to be done to mitigate for these impacts to ensure that there is no net loss. It is important here to **distinguish existing conditions from existing standards**. In many cases our existing conditions (e.g. actual setback of structures from the lake, actual lot coverage, etc.) are more conservative than our existing standards. For example, the average setback from the shoreline in the Residential –L area is greater than the minimum setback standard. This will likely mean that the standards will need to be amended to be more restrictive to better reflect existing conditions. In addition, mitigation will still be needed to address anticipated new impacts.

The key issues to be decided are **how much to change our existing regulations to be more restrictive to reflect existing conditions** and **what standards should be used to mitigate for new impacts**. Department of Ecology has not prescribed how our regulations should change so the City has broad discretion, provided in the end we can show that our plan can result in no net loss.

- C. **Additional Information.** The Planning Commission has requested some additional information to assist in our review of this topic. Below is additional review compiled by staff:
1. **Street Improvements.** The Planning Commission was interested in determining how restoration costs and requirements might compare to half-street improvements that are typically required with new development or significant redevelopment.
 - a. **Costs of half-street improvements:** The approximate current cost of 1/2 street improvements, per lineal foot, ranges between \$200 and \$300/ft. For a 60-foot-wide lot, this would range from \$12,000 to \$18,000, much less than the estimates for shoreline restoration projects at current costs, which are roughly estimated to be between \$66,650 - \$100,250 for a ‘full beach restoration’ on a 60-foot-wide lot.
 - b. **Areas where street improvements are required.** In general, the existing improvements along Lake Ave W, Lake St S, 10th St W, and Rose Point Lane do not meet current street improvement standards and therefore would likely need to be upgraded as part of any significant development activity on the property. Improvements along Lake Washington Blvd. may be adequate and would need to be reviewed on a project-by-project basis.
 - c. **When street improvements are required.** Half-street improvements are required to be installed if the cost of the street improvements along the property frontage is greater than 20 percent of the cumulative building alterations in any five (5) year period.
 - d. **Waiver of street improvements.** These improvements are typically needed to improve pedestrian safety and mobility within the City. As a result, any

waiver of these requirements to allow for shoreline restoration would need to be carefully considered.

2. Restoration Feasibility. Before trying to determine what policy options to explore, the Planning Commission wanted more information on the feasibility of using soft structural shoreline measures in lieu of traditional hard structural shoreline measures. There has been great concern expressed by a number of property owners that softer approaches to shoreline stabilization are not well-suited to Kirkland's shoreline conditions. The term '**soft structural shoreline stabilization**' is somewhat imprecise, since it does not reflect the fact that **these designs use large boulders, log and other features to attenuate wave energy and stabilize the shoreline**.

The City's environmental consultant, The Watershed Company, has extensive experience working with property owners to install these designs in similar situations as are presented along Kirkland's shoreline. **Monitoring has shown these installations have been successful in stabilizing the shoreline when installed properly.** Further, a review of shoreline existing conditions shows the presence of some stable natural areas along Kirkland's waterfront (outside of the natural open spaces owned by the City) as well as beach coves, that have not been armored, indicating that hard structural stabilization is not necessary along Kirkland's entire waterfront.

However, **not all properties may be viable for a softer shoreline design.** As a result, it was important to take a closer look at Kirkland's shoreline to determine whether these designs would be potentially viable.

The Watershed Company has evaluated Kirkland's shoreline characteristics at a general level to determine potential opportunities for restoration. This assessment considered existing primary structure setback, current armored condition, shoreline morphology, shoreline topography to the extent known or observable on aerial photographs, and neighboring shoreline conditions. There are some limitations to this assessment (e.g. in many cases the actual water depth or existing bulkhead height at water's edge is unknown so assumptions were made based on aerial photography; and the extent of underground utilities are not known). "Restoration" opportunities assessed included replacement with soft structural stabilization or some other alternative shoreline improvement, but the assessment was not limited to replacement of the bulkhead with only non-structural measures. The results of this assessment are as follows:

Environment Designation	Natural*	Restoration Potential			TOTAL
		High	Moderate	Low	
		# of Properties with Restoration Potential			
Natural	7	0	0	0	N/A
Residential - Low	8	53	19	16	96
Residential - Medium/High	7	7	10	33	57
Urban Conservancy	4	6	2	0	12
Urban Mixed	2	0	4	8	14
TOTAL	28	66	35	57	179

*Natural – no restoration required, already in a semi-natural condition (no shoreline armoring at water’s edge)

This preliminary landscape-scale review **suggests that there is restoration potential along Kirkland’s shoreline, both within public parks (designated as Urban Conservancy) and along privately-owned stretches.**

3. Other Jurisdiction Approaches. At this time, it is difficult to gauge entirely how other cities will address these issues, because so many are just in the beginning stages and have not drafted regulations. The closest jurisdictions to the City which have draft or adopted plans in place are: 1) Redmond, 2) Sammamish, and 3) Lake Forest Park, but it is important to recognize that our community has different characteristics than these communities, which may lead to different choices. In addition, Bellevue, as part of its CAO update, tackled many shoreline issues at a preliminary scale and will be reviewing these during their update process. Attachment 1 provides an overview of the approaches taken within these Cities.

Jurisdictions are taking varied approaches, with the following general trends: 1) using native vegetation in the shoreline setback (Redmond: minimum % required, increasing if setback reduction was pursued), 2) requiring restoration in association with expansions to or reconstruction of nonconforming development (Sammamish), 3) requiring shoreline restoration as part of setback reduction provisions (Sammamish and Lake Forest Park), and 4) focusing on softer approaches to shoreline stabilization with new and replacement structures (all).

4. Overview of Potential Impacts and Restoration Techniques. The following provides an overview of development activities which negatively impact the lake’s ecological function, and a list of activities which can improve it. The impacts noted are summarized in more detail in the [Final Kirkland Shoreline Analysis Report](#), sections of which have been included in Attachment 2. References to scientific studies are found in this Analysis Report.

	Development Impacts	Opportunities
Upland Action	<p>1. Increases in impervious surface coverage. Impervious surfaces and compact managed lawns interfere with infiltration of precipitation and rapidly send water “downstream” resulting in:</p> <ul style="list-style-type: none"> • Reduction in soil infiltration. • Increased velocity, volume and frequency of surface water flows. • Decreased bank stability and increased erosion. • Shifts in macroinvertebrate community composition. • Reduction in water quality. • Decline in fish species diversity. • Loss of vegetation. 	<ul style="list-style-type: none"> • Limit amount of property covered by impervious surfaces and provide opportunities for water to infiltrate (e.g., rain gardens or bioswales). • Retain existing trees and other shoreline appropriate vegetation. • Enhance shoreline vegetation. • Replace existing impervious surfaces with pervious materials to the extent feasible. • Use pervious materials for new impervious surfaces to the extent feasible.
	<p>2. Removal of existing vegetation.</p> <ul style="list-style-type: none"> • Loss of complex habitat features (i.e., woody debris, overhanging vegetation, emergent vegetation). • Loss of natural bank stabilization feature. • Restrict the ability of the lake to recruit large woody debris and organic material. Large woody debris and emergent vegetation are a source of nutrients, traps sediments; is a source of cover and refuge from predators; buffers high-energy water movements; provides potential roosting, nesting, and foraging opportunities for wildlife; provides foraging, refuge, and spawning substrate for fishes; and/or provides foraging, refuge, spawning, and attachment substrate for aquatic invertebrates and plants. • Lack of vegetation is a limiting factor in terrestrial species (birds, mammals, amphibians) use of the shoreline since cover, food, nesting sites, travel corridors, etc. are absent. • Food production is limited due to lack of native seed and fruit-bearing vegetation. • Reduced source of insects and other organic matter that drop into the 	<ul style="list-style-type: none"> • Retain existing trees and other shoreline appropriate vegetation. • Enhance shoreline vegetation. • Limit land surface modification activities and vegetation removal near the shoreline. • Develop farther back from lake to separate development impacts from the lake.

	Development Impacts	Opportunities
	water and provide food for fish and other aquatic life.	
	<p>3. Increased nutrient and chemical loading to the lake, from number of sources including:</p> <ul style="list-style-type: none"> • Lawn treatment runoff (pesticides, fertilizers, herbicides). • Road and driveway runoff (hydrocarbons, metals). 	<ul style="list-style-type: none"> • Reduce stormwater runoff quantity and improve stormwater quality through use of pervious surfaces and providing opportunities for infiltration and biofiltration of runoff. • Use natural yard care practices and limit use of herbicides, pesticides, and fertilizers. • Develop farther back from lake to separate development impacts from the lake.
	<p>4. Introduction of non-native plants. Out-competes native vegetation, which eliminates native food sources, eliminates native amphibian egg attachment sites, can reduce water quality through interference with water flushing and reduced oxygen, and can alter predator-prey relationships and change fish behavior.</p>	<ul style="list-style-type: none"> • Remove or manage invasive vegetation. • Retain existing trees and other shoreline appropriate vegetation.
	<p>5. Introduction of lighting impacts. Can adversely affect bird migration, amphibian foraging and predator avoidance, and predator-prey relationships of fish in Lake Washington.</p>	<ul style="list-style-type: none"> • Limit intensity, quantity and duration of outdoor lighting • Appropriately shield outdoor lighting. • Develop farther back from lake to separate development impacts from the lake.
Action at or waterward of Ordinary High Water Mark	<p>1. Construction of bulkheads:</p> <ul style="list-style-type: none"> • Loss of complex habitat features (i.e., woody debris, overhanging vegetation, emergent vegetation). • Steepen the nearshore, providing less opportunity for gradual nearshore slopes to attenuate wave energy and provide refuge habitat for small fish from larger fish predators. • Creates a deeper, turbulent nearshore that is inhospitable to small fish and amphibians, as well as to emergent vegetation. • Reduces upwelling/downwelling areas, which are optimal for sockeye salmon spawning. 	<ul style="list-style-type: none"> • Enhance shoreline vegetation. • Reduce shoreline armoring by removing bulkheads, or pulling them back from ordinary high water. • Place fill material for purposes of habitat enhancement (creation of nearshore shallow-water habitat) waterward of the ordinary high water mark.

	Development Impacts	Opportunities
	<ul style="list-style-type: none"> Limits natural recruitment of lakebed materials. 	
	<p>2. Construction of piers:</p> <ul style="list-style-type: none"> Block sunlight and create large areas of overhead cover within the littoral zone. Shade the lake bottom and inhibit the growth of aquatic vegetation. Affect the size, density, and species composition of aquatic macrophytes living directly beneath them. Interfere with migration of juvenile salmonids. In-water structure and cover provides habitat for non-native predators. 	<ul style="list-style-type: none"> Reduce overwater cover through size minimization of replacement over-water structures and use of grating. Reduce size and number of in-water structures.

D. Conceptual Policy Options for Shoreline Restoration. The following section includes various approaches that the Planning Commission has been evaluating in order to mitigate for cumulative impacts from reasonable foreseeable future development and use of the shoreline. These concepts include:

- 1) Shoreline stabilization restoration with new development or redevelopment of property.
- 2) Shoreline restoration associated with minor increases in nonconformance for nonconforming structures.
- 3) Shoreline vegetation standards.
- 4) Incentives for reduced shoreline setbacks with new development or redevelopment of property.
- 5) Performance-based standards which allow for a variety of different approaches to be used.

Concept Approach	Description	Staff Discussion	Staff Recommendation
<p>1) Shoreline restoration with new development or redevelopment of property.</p>	<p>Require an evaluation of the opportunities available to enhance the shoreline, taking into account a number of variables, including:</p> <ul style="list-style-type: none"> • wave fetch and boat-driven wave patterns, • bathymetry (shallow or steep slope below the water line), • topography (shallow or steep slope above the water line), • depth of water at shoreline face, and • Location of residence, utilities, or other built structures relative to the shoreline edge. <p>Depending on these findings, different shoreline restoration alternatives would be explored, including:</p> <ul style="list-style-type: none"> • Installation of shoreline plantings within the shoreline setback, • Placing fill material for purposes of habitat enhancement waterward of the ordinary high water mark, • Setting back bulkheads or portions of bulkheads, • Creating beach coves, and/or • Installing full beaches. 	<p>Shoreline property owners have expressed significant concerns with requiring bulkhead removal and shoreline plantings because of: 1) unfair restriction on property rights, 2) impact ability to protect property and structures from erosion concerns, 3) costs, and 4) effect on property values.</p> <p>After further review of public comments and investigation of the issues, staff has also identified significant concerns with this option, particularly related to the potential costs that could be involved, depending on the shoreline restoration alternative. Staff is also concerned about equity issues, as some properties may be subject to more expensive and involved changes than other property owners, due to the varying site characteristics.</p> <p>Staff would note that the shoreline restoration concepts are feasible along portions of Kirkland’s shoreline (see analysis above). One approach may be to get voluntary restoration projects through public education and encouragement.</p> <p>Smaller components of these shoreline restoration alternatives (e.g. planting or placing fill material for purposes of habitat enhancement) may be appropriate for consideration to mitigate impacts of new or more intensive redevelopment or as a component to a voluntary approach (see Concept Option 4).</p>	<p>Utilize as part of either voluntary alternative to required shoreline vegetation standard (see Section IV.E and Attachment 3) or as part of voluntary reduction of shoreline setbacks (see Section IV.E and Attachment 4).</p>
<p>2) Allow minor addition in the shoreline setback to a</p>	<p>Allow applicants to add a minor addition in the shoreline setback to a dwelling unit with a nonconforming shoreline</p>	<p>As a general rule, nonconforming development may be continued, provided that it is not enlarged, intensified, increased or altered in any way which</p>	<p>Include as part of provisions for nonconforming setbacks (see</p>

Concept Approach	Description	Staff Discussion	Staff Recommendation
dwelling unit with a nonconforming shoreline setback.	setback. The size of the addition in the shoreline setback can be up to 10% of the entire existing structure.	<p>increases its nonconformity.</p> <p>Under this option, additional flexibility would be provided for applicants to enlarge existing structures that are located within the shoreline setback that otherwise would not conform to setback standards, in exchange for shoreline restoration. Staff would recommend that if this option is pursued, structures not be allowed to encroach closer to the lake than the existing non-conforming structure.</p> <p>Based on staff review of existing setback nonconformances, it is estimated that approximately 9 properties in the Residential-L and 27 properties in the Residential – M/H are nonconforming to current standards. If current standards are increased to be more reflective of existing conditions, these numbers will very likely increase. This option could provide greater flexibility for property owners with nonconforming shoreline setbacks to make minor additions or modifications in the shoreline setbacks, in exchange for improvement in the existing shoreline conditions.</p>	Section IV.E and Attachments 3 and 4).
3) Native plant requirement with new development or redevelopment of property.	Establish a native plant requirement to apply within the shoreline setback area.	<p>Native vegetation along the shoreline provides many different functions, including but not limited to:</p> <ul style="list-style-type: none"> • Providing organic inputs critical for aquatic life. • Providing a source of food. • Stabilizing banks and minimizing erosion. • Filtering and vegetative uptake of nutrients and pollutants from ground and surface water. • Providing a source of large woody debris into the aquatic system. • Providing shade or physical overwater cover. 	Include as shoreline vegetation requirement for development activities (see Section IV and Attachments 3 and 4).

Concept Approach	Description	Staff Discussion	Staff Recommendation
		<ul style="list-style-type: none"> • Providing habitat area usable by a wider range of species. <p>Except within the City’s large natural parks, the City does not contain significant areas of native vegetation along the shoreline. This approach would result in an increase in the quantity and quality of vegetation within the shoreline jurisdiction as a whole, which would help to mitigate the impacts of new development and redevelopment. In general, this requirement would not add significant cost to a project, since vegetation would likely be established as part of any new development. If this option is pursued, a threshold for when to trigger this approach will need to be established. While this option may impose a new standard for landscaping on privately owned shoreline property, the City has pursued this type of requirement for wetlands, streams, and their associated buffers. These areas, similar to the shoreline, have unique functions and values that need to be protected and restored where possible.</p> <p>However, shoreline property owners generally have not expressed support for this type of approach, as it limits individual choice on private property. Many residents want lawns between their homes and the shoreline, want access to the shoreline within the entire shoreline setback and are concerned about view blockage of the vegetation.</p> <p>Presently, the City does not regulate the type of landscaping on private residential property, with the exception of the Prohibited Plant List or where the property is encumbered by a sensitive area such as a wetland or stream. This would impose a new requirement on shoreline property owners.</p>	

Concept Approach	Description	Staff Discussion	Staff Recommendation
4) Incentive for reduced shoreline setbacks with new development or redevelopment of property.	Provide an incentive system that encourages removal of bulkheads and the installation of native plants, in exchange for a shoreline setback reduction. The amount of setback reduction could be scaled to the level and type of restoration proposed, allowing for flexibility in proposed designs.	<p>This approach, coupled with shoreline setback standards that are increased to be more reflective of existing shoreline conditions, is likely to ensure that the existing ecological functions are maintained and potentially increased over time as new construction either rebuilds in a manner that is consistent with existing conditions or, if development is proposed to occur closer to the shoreline, it is accompanied by appropriate mitigation. Generally, shoreline restoration of varying degrees would be part of a suite of options (e.g. lawn reduction, bulkhead removal, use of green roof, impervious surface reduction, etc.) that can be selected by applicants to reduce a shoreline setback – flexibility that may be well received by shoreline property owners.</p> <p>However, under this approach, for those sites where a development does not intrude into the shoreline setback, shoreline conditions will not improve. Also, allowing development to encroach into the shoreline setback would effectively result in permanent loss of opportunity to restore the area to vegetation.</p>	See voluntary reduction of shoreline setbacks in Section IV.E and Attachments 3 and 4.
5) Performance-based standard	Establish a performance-based option that requires improvement of shoreline functions as part of any new development or redevelopment. Burden would be on the applicant to develop and present a site plan that increases site ecological function over existing condition.	This approach provides greater flexibility to applicants and encourages creative solutions for difficult sites. However, since this would require knowledge and expertise with biological systems, it would necessitate that a qualified professional review the proposal to determine that the objectives have been met, similar to our current system for wetland and stream modifications. This can add significant expense and uncertainty to an applicant.	Utilize as part of voluntary alternative to required shoreline vegetation standard (see Attachments 3 and 4)

IV. SHORELINE SETBACKS

A. Planning Commission Direction. At the November 20, 2008 meeting, the Planning Commission began a review of shoreline setbacks. The Planning Commission reviewed draft concepts for shoreline setbacks that would apply within the Shoreline – L shoreline environment, and recommended that staff continue to explore Concept Approaches 3 and 4 and provide additional details about these concepts to the Planning Commission. This information is provided in Section IV.F below. Review of setback concepts for the other shoreline environments will need to be accomplished at the December 11, 2008 meeting. This information is provided in Section IV.G below.

B. Purpose. Shoreline setbacks serve several different functions, including, but not limited to:

1. Protecting existing shoreline functions and shoreline habitat. A number of scientific studies have been completed addressing different riparian functions and the buffers needed to protect these functions. A review of scientific studies for riparian areas, such as streams and lakes, indicates the following:
 - Riparian areas can provide protection by moderating surface water and sediment inputs.
 - Complex buffers with multiple classes of vegetation may be most effective at removing a variety of contaminants.
 - Chemical removal functions increase with buffer width.
 - The literature includes a wide range of recommended buffer widths; those with smaller widths may be adequate, provided the existing buffer is high-quality forest and/or the surrounding land use has low impact. Buffers less than 10 meters in width (approximately 33 feet) are not generally considered functionally effective.

Attachment 5 contains an excerpt from a study conducted by Skagit County that summarizes the review of different scientific studies addressing riparian functions and the buffer distances needed to protect these functions. Though the study was completed for a rural county, the summary of scientific studies contained within it addresses riparian functions in general and are relevant to the City's shoreline.

The need for protection of riparian functions must also be balanced with the other priorities of the Shoreline Master Program, including promoting shoreline preferred uses, providing access to and use of the shoreline, and protecting private property rights. As a result, though a review of scientific literature may suggest the need for larger shoreline buffers to protect more shoreline functions, staff has proposed setback standards that are consistent with existing conditions and are focused on meeting a no net loss standard.

2. Preventing permanent preclusion of restoration of shoreline functions and habitat, with the overall goal of achieving new State requirements for no net loss.
3. Avoiding damage from flooding and erosion.

4. Ensuring that new development is adequately sited to avoid and minimize need for new shoreline stabilization features.
5. Preserving and enhancing views of the water.
6. Maintaining existing character and the scenic quality of Kirkland's shorelines.

C. State Requirements. Under the State Guidelines, environment-specific regulations will typically include building or structure height and bulk limits, setbacks, maximum density or minimum frontage requirements, and site development standards to account for different shoreline conditions. These standards need to be established in such a way as to assure no net loss of shoreline ecological functions.

With regard to no net loss and setbacks, as properties develop or redevelop at increased intensity, (e.g. a larger residence built closer to the lake), that activity is likely to introduce new impacts that then need to be mitigated in some manner. For instance, if a residence is constructed closer to the shoreline than existing development, the impact of shifting the residence closer to the shoreline can include increased activity, noise, and light transmission near the water, as well as a reduction in area to moderate runoff volume and remove waterborne contaminants and further fragmentation of open space area for wildlife habitat. Essentially, **a reduction in the setback shifts many of the impacts associated with development closer to the shoreline interface, impacting shoreline functions.**

D. Existing Standards and Conditions.

1. Existing standards. The existing setback standards are as follows:

- a. Residential – L: 15', 15% of average parcel depth, or average of adjoining lots, whichever is greater
- b. Residential – M/H: 15' or 15% of average parcel depth, whichever is greater
- c. Urban Conservancy: Case-by-case
- d. Urban Mixed:
 - Urban Mixed 1: 15' or 15% of average parcel depth, whichever is greater
 - Urban Mixed 2: 15' or 15% of average parcel depth, whichever is greater; or for mixed-use developments determined on a case-by-case basis based on the compatibility of the development with adjacent uses and the degree to which public access, use and views are provided.

2. Existing Conditions: The following is a summary of existing conditions. This information has been gathered by an examination of current aerial photographs through GIS analysis. Existing setbacks and location of existing improvements have been estimated for each waterfront parcel. Average lot depths have been estimated by the average, based on the minimum and maximum lot depths on a property.

Note: Lot depths have been re-examined to address an unusual existing condition along 5th Ave W, where the total lot depth is bisected by the private access street. Based on this re-examination, it is recommended that the lot depth of 36 properties along 5th Ave W would be based upon the average of the distance from the ordinary

high water mark to the street providing direct access to the subject property (or 5th Ave W). This is consistent with the current implementation of the setback in this area (where setbacks are based upon 15% of the average lot depth, with lot depth based on the distance from the ordinary high water mark to the street providing access). **As a result of this recommended change, the existing median shoreline setbacks for each of the 3 lot depth ranges in the Residential –L designation area are now different than before; therefore, the proposed base setbacks have been revised to reflect this modification.**

Shoreline Environment	Measurement	Existing Conditions
Residential – L	Approximate Average Structure Setback	53 feet
	Approximate Median Structure Setback	42.5 feet
	Approximate Average Improvement Setback (e.g. to edge of decks and patios or other similar improvements)	38.5 feet
	Approximate number of lots with existing nonconforming setbacks	8 lots have setback of <15'; 9 lots have setback of <15% of the average lot depth
	Approximate Average Structure Setback without existing nonconformances	46.2 feet
	Setback Modal Peak	30-40 feet
	(Revised) Median Setbacks by Lot Depth (based on depth of lot to street providing access)	Lots <100': 31' Lots >100 and <150': 39.8' Lots >150: 74.9'
	Approximate Median Total Lot Depth	184.1 feet
	Approximate Average Lot Depth, with Lot Depth measured to street providing access	120 feet
	Approximate Average Lot Depth, with Lot Depth measured to base of slope for slopes greater than 40%	135.2 feet
Residential – M/H	Approximate Average Structure Setback	26.6 feet
	Approximate Average Improvement Setback	19.9 feet
	Approximate number of lots with existing nonconforming setbacks	20 lots have setback of <15'; 27 lots have setback of <15% of the lot depth
	Approximate Average Structure Setback without existing nonconformances	40.6 feet
	Setback Modal Peak	<15' (nonconforming); otherwise 20-30'
	Approximate Median Total Lot Depth	166.5 feet

Shoreline Environment	Measurement	Existing Conditions
	Median Setbacks by Lot Depth	Lots <100': 17' Lots >100 and <150': 21' Lots >150: 35.7'
	Approximate Average Lot Depth, with Lot Depth measured to base of slope for slopes greater than 40%	141.9 feet
Urban Mixed	Approximate Average Structure Setback	32.2 feet
	Approximate Average Improvement Setback (e.g. to edge of decks and patios or other similar improvements)	12.8 feet
	Approximate number of lots with existing nonconforming setbacks	4 lots have setback of <15'; 7 lots have setback of <15% of the lot depth
	Setback Modal Peak	20-30 feet
	Approximate Median Total Lot Depth	223.1 feet

E. Residential – L Setback Options. At the November 20, 2008 meeting, the Planning Commission reviewed 4 conceptual approaches for addressing shoreline setbacks in the Residential – L shoreline environment. The conclusion at this meeting was to focus further on Concept Approaches 3 and 4. Staff has further developed Concept Approach 3 and 4 for Planning Commission consideration. A more detailed description of these options is contained in Attachment 3 and Attachment 4, respectively. A brief overview of the concept follows:

- Option 3:** Required shoreline setback range of 3 depths (30', 40' or 50'-70') based on lot depth with required shoreline vegetation enhancement standards (or alternative approved measures that will provide equal benefits). No further reduction in shoreline setback would be permitted.
- Option 4:** Required shoreline setback range of 3 depths (30', 40' or 50'-70') based on lot depth with required shoreline vegetation enhancement standards (or alternative measures that will provide equal benefits), but allow the shoreline setback to be reduce down to 25 feet in exchange for enhanced mitigation.

The reason for the range of 50'-70' for the 150' and greater lot depth range is to make a final recommendation after the Cumulative Impact Analysis has been done. The median setback range for lots with lot depths of 150' and greater is 74.9 feet. This setback would probably be closer to meeting no net loss, but is a considerable setback so staff recommends that a setback between 50'-70' be studied in the Cumulative Impact Analysis and then the staff would have a better idea if the 50' setback with mitigation would be acceptable.

In order to provide a visual depiction of these proposed setbacks and how they differ from current setback standards, Attachment 7 shows how the proposed shoreline setbacks

would be applied to existing single family development configurations in the Residential – L designation area that have median (proposed base) each of the 3 lot depth categories. Since the existing median setback is proposed to be used as the base setback, approximately half of the existing lots will become non-conforming and half of the lots will have setbacks greater than proposed base setback. Creating non-conforming shoreline setbacks cannot be avoided in order to meet the no net loss and cumulative impact standards since the larger existing shoreline setbacks create a high level of no net loss standard that must be met.

Under the more detailed conceptual approaches, both options provide:

- An **alternative compliance provision to the shoreline vegetation requirement**, to allow for property owner flexibility to undertake alternative shoreline enhancements.
- **Special provisions for nonconforming setbacks that would permit minor additions in the shoreline setback to existing nonconforming structures located in the shoreline setback** As a general rule, nonconforming development may be continued provided that it is not enlarged, intensified, increased or altered in any way which increases its nonconformity. The special provisions included would expand the opportunity for applicant's to enlarge structures that otherwise would not conform to shoreline setback standards, in exchange for shoreline restoration. (Note: The conceptual approaches do not include all nonconformance provisions that would apply, such as lot coverage, height and encroachment into other yards, just a special nonconformance provision that is proposed to address minor additions to existing nonconforming structures in the shoreline setback. Please see [WAC 173-27-080](#) for a full list of other standard nonconformance provisions).
- **Provisions addressing nonconforming landscape standards.** Since the properties in the Residential – L do not currently have minimum landscape standards for shoreline vegetation, many of the properties will become nonconforming. This section **clarifies under what circumstances compliance with new shoreline vegetation standards would be required.** The standards provided in Attachments 3 and 4 are the same that are currently provided in the Zoning Code for nonconforming landscaping.

In addition, staff would recommend that the Zoning Code be examined to determine whether other required yards, such as front yards, should be reduced in order to offset some of the impacts from larger shoreline setbacks. Staff would recommend that this issue be brought back at another meeting date, when revisions to the Zoning Code required to better coordinate between the updated SMP are discussed.

F. Conceptual Setback Options for Other Environmental Designations. The following are some initial concepts for establishing new setback standards for other shoreline environments.

1. **Residential – M/H.** The Residential – M/H environment contains medium and high density residential development primarily in the area located south of the CBD. For this discussion, there are a couple of important concepts to keep in mind: 1) under the principles of the Shoreline Management Act multi-family development is not a

preferred use in the Shoreline area, 2) multi-family development is already subject to specific landscaping standards under the zoning regulations, and 3) these properties are subject to the public access walkway standards. A minimum setback of 25-feet is proposed in order to provide adequate room to accommodate shoreline access, shoreline vegetation, and provide for shoreline functions such as filtration of pesticides and other chemicals.

Shoreline Environment	Conceptual Approach	Staff Discussion
Residential – M/H	<p><i>Option 1:</i> Establish a base setback that would apply to all properties, similar to the existing median structure setback, in this case approximately 30 feet (median excluding overwater structures).</p>	<p>Under this option, there is concern about whether this will effectively address ongoing impacts to shoreline functions. There are a significant number of structures located very close to the shoreline (note: it is estimated that 27 out of 56 properties do not presently conform to setback standards), resulting in a lower median setback. Significant loss of existing shoreline functions could occur if redevelopment on deeper lots would occur closer to the shoreline, since many of the nonconforming improvements close to the shoreline (or over the water) are unlikely to change over time to offset this impact.</p>
	<p><i>Option 2:</i> Establish base setbacks for lots of varying depths. Include standards for use of native vegetation as part of required landscaping for multifamily or commercial projects.</p> <p>Example:</p> <p>Lots <100': Base setback of 25'.</p> <p>Lots >100 and <150': Base setback of 30'.</p> <p>Lots >150': Base setback of 40'.</p>	<p>This option relies on vegetation enhancement on new development and redevelopment in order to offset impacts from on-going development and any shifts that might occur for some development to move closer to the shoreline than current conditions.</p> <p>This option does not provide flexibility to adjust setbacks with increased shoreline restoration.</p>

Shoreline Environment	Conceptual Approach	Staff Discussion
	<p>Option 3: Establish base setbacks for lots of varying depths. Include standards for use of native vegetation as part of required landscaping for multifamily or commercial projects. Allow voluntary reductions in the setback standards in exchange for additional shoreline restoration commensurate with proposed reduction.</p> <p>Example:</p> <p>Lots <100': Base setback of 25' (no further reduction permitted).</p> <p>Lots >100 and <150': Base setback of 30', can be reduced to a minimum of 25' with restoration.</p> <p>Lots >150: Base setback of 40', can be reduced to 25' with restoration.</p>	<p>Generally, shoreline restoration of varying degrees would be part of a suite of options (such as creation of beach coves, use of green roof, impervious surface reduction, etc.) that can be selected by applicants to reduce a shoreline setback – flexibility that may be well received by shoreline property owners.</p> <p>While setbacks are larger on deeper lots, property owners would have the option of reducing these setbacks to a more similar location as shallower lots, with additional mitigation.</p> <p>In this case, vegetation standards would be included as part of the standard development regulations.</p>

- 2. Urban Mixed.** The Urban Mixed environment contains business districts located along the lake, including the CBD, JBD, and Carillon Point. For this discussion, there are a couple of important concepts to keep in mind: 1) there is an established preference in the Shoreline Management Act for water-oriented uses, 2) commercial development located within business districts are already subject to specific landscaping standards under the design or zoning regulations, and 3) these properties are subject to the public access walkway standards.

Shoreline Environment	Conceptual Approach	Staff Discussion
Urban Mixed	<p>Option 1: Establish a base setback that would apply to all properties, similar to the existing median structure setback, in this case approximately 30 feet. Include standards for use of native vegetation as part of required landscaping.</p>	<p>Kirkland lots within shoreline business districts are quite variable in depth and this one-size fits all approach does not respond well to existing conditions. For instance, within the Urban Mixed zone, there are a number of lots that are greater than 200 feet in depth, but there are also lots less than 100 feet in depth. Increasing development closer to the shoreline may not appropriately reserve sufficient areas closer to the shoreline for water-dependent uses.</p>
	<p>Option 2: Establish different setbacks based on the land use, to promote water-oriented uses along shoreline. Include standards for use of native vegetation as part of required landscaping.</p> <p>Example:</p> <p>Water-dependent uses: 0 – 16’</p> <p>Water-related use: 20’</p> <p>Water-enjoyment use: 30’</p> <p>Other uses: 50’</p>	<p>This option establishes a priority for water-dependent uses to locate closer to the shoreline.</p>
	<p>Option 3: Establish different setbacks by commercial district, reflective of existing conditions. Include standards for use of native vegetation as part of required landscaping.</p> <p>Example:</p> <p>CBD: 20’</p> <p>Carillon: 50’</p> <p>Juanita: 30’</p>	<p>This option provides no priorities for water-dependent uses.</p>

3. **Urban Conservancy.** The Urban Conservancy environment contains mostly publicly owned park properties. For this discussion, there are a couple of important concepts to keep in mind: 1) there is an established preference in the Shoreline Management Act for water-oriented uses, 2) public access is an important concept for development of public properties, 3) vegetation is a common component of development of public properties.

Shoreline Environment	Conceptual Approach	Staff Discussion
Urban Conservancy	<p><i>Option 1:</i> Establish different setbacks based on the land use, to promote water-oriented uses along shoreline. Include standards for use of native vegetation as part of landscaping.</p> <p>Example:</p> <p>Water-dependent uses: 0 – 16’</p> <p>Water-related use: 20’</p> <p>Water-enjoyment use: 30’</p> <p>Other uses: Outside of shoreline area, if possible, otherwise 50’</p>	This option establishes a priority for water-dependent uses to locate closer to the shoreline.

G. Allowed encroachment into required shoreline setback. Attachment 6 provides draft standards that address **what encroachments** may be permitted within the shoreline setback. These provisions contemplate further encroachment into the shoreline setback to accommodate common appurtenances such as decks, walkways, and other improvements. The current SMP does not specifically address what encroachments are permitted within the shoreline setback, but the Zoning Code does outline a number of allowed improvements within [KZC 115.115](#). The draft standards are, in certain scenarios, **more restrictive** on the type of encroachments permitted within the shoreline setback than currently provided in KZC 115.115. For instance, the current zoning code provisions addressing setback encroachments permit unlimited improvements in a setback as long as they do not extend more than 4” above finished grade. The proposed SMP standards, however, would propose to limit encroachment for decks and patios to no more the five (5) feet, regardless of whether the deck would not extend more than 4” above finished grade. This limitation has been proposed in order to limit impacts to shoreline functions and provide area for shoreline vegetation.

V. TOPICS CARRIED OVER FROM PREVIOUS MEETINGS

The following topics were originally presented in the September 11 or October 9, 2008 meeting packets, but, because of time constraints, have yet to be discussed by the Planning Commission. If time is available at the December 11th meeting, staff would recommend reviewing these items.

A. GENERAL STANDARDS

The draft regulations in Attachment 8 contain provisions that would apply to general uses. Provided below is a summary of each issue, input from the public (if any), options to consider (if there are different policy options), together with a staff recommendation, if needed.

1. Parking (see KZC 83.400 in Attachment 8)

Key Issues: None.

Background: The Guidelines addressing parking are contained in WAC 173-26-241(3)(k) and focus on limiting parking within the shoreline and minimizing the environment and visual impacts of parking.

Proposed Regulations: The City's existing SMP contains provisions addressing parking; the concepts from the existing regulations are carried forward to the new shoreline regulations, with clarifications on standards, as follows:

- New **prohibition on parking within the waterfront setback**, except for subsurface parking designed to meet certain standards;
- **Restrictions on parking extending closer to the shoreline** than the permitted structure; and
- **New design standards** for parking garage facades that may be face public pedestrian walkways, use areas, or parks.

2. Miscellaneous Standards (see KZC 83.390 in Attachment 8)

Key Issues: New standards addressing the design of water-oriented uses.

Background: Site Planning and Building Design standards are one mechanism that local jurisdictions can use to respond to the management policies established for the Urban Mixed shoreline environment.

Proposed Regulations: The proposed standards include provisions addressing screening of outdoor storage areas, rooftop appurtenances and garbage receptacles, glare and special standards for water-enjoyment uses to ensure that these uses are designed to facilitate enjoyment of the shoreline.

3. Lighting (see KZC 83.420 in Attachment 8)

Key Issues: New lighting standards applying to the shoreline jurisdiction.

Background: Lighting standards are one mechanism that local jurisdictions can use to respond to the management policies established for the shoreline environments. Recent studies have also yielded results indicating that urban light has altered predator prey interactions for fish in Lake Washington (Kitano et al. 2008). Presently, the existing shoreline program does not contain lighting

standards, but the zoning standards do require that light fixtures be selected, placed and directed so that glare produced by any light source, to the maximum extent possible, does not extend to adjacent properties or to the right-of-way.

Proposed Regulations: Staff has proposed regulations addressing direct point source light pollution and glare onto Lake Washington, with special light level standards for protection of Lake Washington and areas in the Natural shoreline environment, where wildlife may be more sensitive to the impacts of light, as well as protection of residential properties from adjoining commercial development in residential shoreline areas. The proposed lighting standards also include provisions to address aesthetic concerns about light pollution along the shoreline, including direction and shielding requirements.

Policy Question: Staff is seeking Planning Commission direction on this section, in particular whether there is agreement that aesthetic issues should be addressed and, if so, what the triggers should be to require existing lighting that may not conform to these standards to come into compliance, such as a major addition or a major remodel. In order to evaluate lighting levels, the standards also include new requirements for lighting studies to be submitted to the City for review.

4. **Signage** (see KZC 83.410 in Attachment 8)

Key Issues: None.

Background: Sign standards are one mechanism that local jurisdictions can use to respond to the management policies established for the Urban Mixed shoreline environment. Existing zoning regulations already limit the use of electrical signs along portions of Lake Washington Blvd.

Proposed Regulations: New provisions are proposed to address signage in view corridors as well as signage that may be constructed over-water.

5. **In-water Activity** (see KZC 83.380 in Attachment 8)

Key Issues: None.

Proposed Regulations: Standards are proposed by staff to address many of the best management practices that should be used when constructing structures within water.

B. SHORELINE USES AND ASSOCIATED DEVELOPMENT STANDARDS

The draft regulations in Attachment 9 contain provisions that will be applied to specific uses. Provided below is a summary of each issue, input from the public (if any), options to consider (if there are different policy options), together with a staff recommendation, if needed.

1. Shoreline Development Standards.

Key Issues: Proposed changes to a number of existing SMP standards for building height, lot coverage and minimum lot size/density address **inconsistencies between existing zoning and SMP standards.**

Background: The State Guidelines reference the use of standards for density, setbacks, height and lot coverage in a number of different areas, including as part of the management policies for shoreline environments.

Proposed Regulations: The proposed regulations are contained in Attachment 9. Attachment 10 provides a summary of existing zoning and shoreline standards. The following discussion summarizes key changes:

1. **Lot size/Density:** In general, lot sizes have been modified to reflect zoning standards. In an effort to encourage development that would provide public access, staff is proposing to include a **density incentive in the Residential – M/H environment** that would permit a minimum lot area of 1,800 square feet per dwelling unit for up to two dwelling units, instead of the typical 3,600 minimum lot area per unit. This is proposed to encourage an applicant to pursue development of two units, which would require a public access walkway, instead of a single unit on a lot, which does not require public access.
2. **Building Height:** In general, the shoreline building height standards have been modified to reflect the existing zoning standards. In a number of instances, this results in a **decrease in allowable building height from the existing SMP standards**. However, the end result is the same because even if the shoreline standard allows taller buildings, the more restrictive zoning regulation would prevail.

For instance, the proposed shoreline building heights in a portion of CBD 2 on the west side of Lake St South and in JBD 4 is 28 feet and 26 feet respectively to reflect current zoning standards, but the current SMP would allow up to 41’.

Concerning building heights in the CBD 1 and 2 shoreline environments, the City Council is in the process of reviewing building heights in the Downtown, with changes anticipated to be adopted by February, 2009 or so. If any changes occur to the CBD 1 or 2 zones, the changes will be reflected in the draft shoreline environment regulations.

In some zones the **method for calculating building height** has been modified from the existing SMP standard to be consistent with the current Zoning Code. In the CBD zones, height is currently measured above the midpoint of the abutting right-of-way so that building height more clearly relates to the building mass perceived at the street level, whereas the current SMP measures above existing grade of the proposed building.

The proposed regulations clarify how the **building height exceptions** that are allowed in the Zoning Code would apply within the shoreline area, such as the Carillon Master Plan site, PLA 15A zone outside of the master plan area, certain CDB zones and approved Planned Unit Developments that include an increase in height. The proposed regulations also reflect special criteria for views when a building exceeds a height of 35 feet above average building elevation found in the RCW and WACs.

4. Lot Coverage: New standards have been added for lot coverage not previously addressed in the SMP. In general, the property shoreline standards are consistent with current zoning regulations, except that in CBD 2, lot coverage on properties that abut Lake Washington has been reduced from 100% to 90% to reflect new requirement for vegetation along the shoreline edge.

Public Input: In the survey, over half of respondents indicated that standards should become more restrictive on structure placement along the shoreline (e.g. setback from the water's edge and other structures on adjacent lots, and designed to cover less area on a lot). However, it should be noted that property owners expressed a desire for site planning regulations, such as setbacks or lot coverage, to stay the same or become more flexible.

2. Residential Uses.

Key Issues: None.

Background: The State Guidelines addressing residential uses are contained in WAC 173-26-241(3)(j) and focus on assuring no net loss of shoreline ecological functions will result from residential development, including include specific regulations for setbacks and buffer areas, density, shoreline armoring, and vegetation conservation requirements.

Proposed Regulations: See Attachment 9.

3. Commercial Uses.

Key Issues: New standards for **float plane** landing and mooring facilities.

Background: The State Guidelines addressing commercial uses are contained in WAC 173-26-241(3)(d) and focus on:

- Giving preference to water-dependent commercial uses over non-water-dependent commercial uses; and second, giving preference to water-related and water enjoyment commercial uses over non-water-oriented commercial uses.
- Requiring that public access and ecological restoration be considered as potential mitigation of impacts to shoreline resources and values for all water-related or water-dependent commercial development unless such improvements are demonstrated to be infeasible or inappropriate.
- Assuring that commercial development will not result in a net loss of shoreline ecological functions or have significant adverse impact to other shoreline uses, resources and values provided for in 90.58.020 RCW such as navigation, recreation and public access.

Proposed Regulations: See Attachment 9.

4. Industrial Uses.

Key Issues: None.

Background: The State Guidelines addressing industrial uses are contained in WAC

173-26-241(3)(f) and focus on:

- Giving preference to water-dependent industrial uses over non-water-dependent industrial uses; and second, giving preference to water-related industrial uses over non-water-oriented industrial uses.
- Assuring that industrial development will be located, designed, or constructed in a manner that assures no net loss of shoreline ecological functions and such that it does not have significant adverse impacts to other shoreline resources and values.
- Incorporating public access as mitigation for impacts to shoreline resources and values unless public access cannot be provided in a manner that does not result in significant interference with operations or hazards to life or property.

Proposed Regulations: See Attachment 9.

5. Recreational Uses.

Key Issues: New standards for **tour boat facilities** and **boat launches**.

Background: The State Guidelines addressing recreational uses are contained in WAC 173-26-241(3)(i) and focus on:

- Assuring that shoreline recreational development is given priority and is primarily related to access to, enjoyment and use of the water and shorelines of the State.
- Assuring that the facilities are located, designed and operated in a manner consistent with the purpose of the environment designation in which they are located and such that no net loss of shoreline ecological functions or ecosystem-wide processes results.

Proposed Regulations: See Attachment 9.

6. Transportation Facilities.

Key Issues: New standards for **water taxis** and **passenger only ferry terminals**.

New standard regarding the section and placement of **street tree** to address protection of public views from the adjacent rights-of-way.

Background: The Guidelines addressing transportation facilities are contained in WAC 173-26-241(3)(k) and focus on:

- Planning, locating, and designing proposed transportation and parking facilities where routes will have the least possible adverse effect on unique or fragile shoreline features, will not result in a net loss of shoreline ecological functions or adversely impact existing or planned water-dependent uses. Where other options are available and feasible, new roads or road expansions should not be built within shoreline jurisdiction.

Proposed Regulations: See Attachment 9. Regarding street trees, the proposed regulations address tree selection and placement and note that street trees shall be selected and located so that they do not impair public views of the lake from properties east of the roadway.

The Houghton Community Council had a discussion earlier this year about protecting private views. However, in the past the City Council has taken the policy position that private views are not to be protected. The Comprehensive Plan reflects this policy decision in the Community Character Element Policy CC-4.5 and the Transportation Element Policy T-6.3 in which it is stated that public views are protected, but not private views.

7. Utilities.

Key Issues: None.

Background: The Guidelines addressing utilities are contained in WAC 173-26-241(3)(l) and focus on:

- Ensuring that utility facilities are designed and located to assure no net loss shoreline ecological functions, preserve the natural landscape, and minimize conflicts with present and planned land and shoreline uses while meeting the needs of future populations in areas planned to accommodate growth.
- Limiting utility production and processing facilities, such as power plants and sewage treatment plants, or parts of those facilities that are non-water-oriented.
- Limiting transmission facilities for the conveyance of services, such as power lines, cables, and pipelines, to outside of the shoreline area where feasible.
- Locating utilities in existing rights of way and corridors whenever possible.
- Limiting development of pipelines and cables on tidelands.

Proposed Regulations: See Attachment 9.

8. Land Division.

Key Issues: New standards for land division added to SMP.

Background: The State Guidelines addressing land division are contained in WAC 173-26-241(3)(i) and focus on:

- Providing standards for the creation of new residential lots through land division that accomplish the following:
 - Public access is provided where it could not be required without the division of land.
 - Plats and subdivisions must be designed, configured and developed in a manner that assures that no net loss of ecological functions results from the plat or subdivision at full build-out of all lots.
 - Prevent the need for new shoreline stabilization or flood hazard reduction measures that would cause significant impacts to other properties or public improvements or a net loss of shoreline ecological functions.

Proposed Regulations: See Attachment 9.

C. SHORELINE MODIFICATIONS.

The regulations in Attachment 11 contain provisions that will apply to typical structures and activities that modify the shoreline environment. Provided below is a summary of each issue, input from the public (if any), options to consider (if there are different policy options), together with a staff recommendation, if needed.

1. Breakwaters/jetties/groins.

Key Issues: None.

Background: The State Guidelines addressing breakwaters, jetties and groins are contained in WAC 173-26-231(3)(d) and focus on assuring no net loss of shoreline ecological functions. The Guidelines and the proposed regulations limit the shoreline environments in which these types of structures may be approved, and prohibit them from use for any other purpose than protection of “water-dependent uses, public access, shoreline stabilization, or other specific public purpose.” Most of the standards contained in the proposed regulations are found in the City’s existing SMP.

Proposed Regulations: See Attachment 11.

2. Dredging and dredge materials disposal.

Key Issues: **Slightly more restrictive standards for dredging.** Proposed regulations do not allow dredging to accommodate new uses, just to maintain existing uses or implement a restoration project.

Background: The State Guidelines addressing dredging and dredge material disposal are contained in WAC 173-26-231(3)(f) and focus on assuring no net loss of shoreline ecological functions. Dredging projects have the potential for the following impacts:

- re-suspend contaminants that may be contained in the soil
- disturb substrates that have established aquatic vegetation
- disturb or harm invertebrates and fish that may be present in the substrate, and
- may cause short-term but acute turbidity problems

Accordingly, dredging is allowed only for specific purposes, such as maintenance of existing navigation channels, restoration, maintenance of existing boat moorage (both public and private), and maintenance of other water-dependent or public uses. To establish that the dredging is implemented to minimize impacts and is the minimum extent necessary, the proposed regulations include a requirement for submittal of a detailed plan and may require special studies to assess contaminant levels in the material to be disturbed. Placement of dredged materials into the lake is tightly controlled.

Proposed Regulations: See Attachment 11.

Public Input: A number of property owners who reside in **Juanita Bay** have noted the desire to see **dredging** activities in this bay. The City’s **Final Shoreline Analysis Report** contains a discussion about sedimentation in Juanita Bay. As explained in the report, the City has planned projects to do improvements along Juanita Creek to reduce erosion from going into Juanita Creek. In addition, the City is in the process of preparing

a Surface Water Master Plan to address the overall condition of the City's drainage basins, including storm water runoff and erosion.

3. Land Surface Modification.

Key Issues: More restrictive standards for land surface modification activities on upland property.

Background: The State Guidelines do not specifically address land surface modification, but do focus on the use of clearing and grading regulations as one of the techniques that should be used as part of shoreline vegetation management.

Proposed Regulations: The proposed regulations focus on **limiting potential impacts from land surface modification within the shoreline setback** area by narrowly scoping the permitted land surface modifications activities in this area (see Attachment 11). This may be more restrictive than the current SMP standards, which allowed land surface modification for 1) development of an approved activity, 2) use of the property, or 3) incidental landscaping for an existing use (see Attachment 10). Under the current standards, vegetation removal within the shoreline setback was not regulated by the City. The new provisions propose additional standards that would limit removal of native vegetation or vegetation installed as part of an enhancement plan. The new standards also address potential erosion and drainage impacts.

4. Fill.

Key Issues: None.

Background: The State Guidelines addressing fill are contained in WAC 173-26-231(3)(c) and focus on assuring no net loss of shoreline ecological functions. Circumstances in which fill are allowed are limited to those fills associated with water-dependent or public access uses, to accommodate certain transportation corridors, and for restoration. These regulations actually expand the circumstances where fill may be allowed, accommodating fills for soft shoreline stabilization or restoration purposes.

Proposed Regulations: See Attachment 11.

Public Input: A number of citizens and those with interest in Kirkland's shoreline have requested that the existing SMP be revised to allow private fills that would enable alternative shoreline stabilization or restoration. At least one citizen was precluded from implementing a restoration project as a result of provisions in the existing SMP. State and federal agencies with jurisdiction on Lake Washington have been approving and encouraging these types of fills for several years as a means to improve ecological functions.

5. Shoreline habitat and natural systems enhancement projects.

Key Issues: None.

Background: This is a new SMP section, and is addressed in the State Guidelines under WAC 173-26-231(3)(g). This section is designed to provide a clear and simple path for permitting and approval of projects specifically intended for the primary purpose of "establishing, restoring, or enhancing habitat for priority species in shorelines." A

number of enhancement actions are covered under this section, including native vegetation establishment, removal of non-native vegetation, conversion of hard structural shoreline stabilization to soft shoreline stabilization, implementation of projects identified in the Restoration Plan that will be prepared as part of this SMP, and implementation of any projects identified in the WRIA 8 documents. Many of these projects may qualify for a Shoreline Exemption while others will require a Shoreline Substantial Development permit.

Proposed Regulations: See Attachment 11.

Public Input: Respondents to the survey indicated that a preferred method for the City to encourage restoration is to reduce review time – processing restoration projects as Exemptions or Substantial Developments will help enable this. Prior to creation of this section, some projects might have required a CUP because of fill activity that might have been proposed landward of the ordinary high water mark. This section enables these projects to be reviewed as enhancement of the shoreline.

VI. PUBLIC COMMENTS

A. Public Comments. This memo includes 5 written comment letters (see Attachments 12-16).

B. Response to Specific Issues. Staff would like to provide a response or clarification to several questions that are included in the attached comments. Please note that new draft language addressing shoreline stabilization will be brought forward to the Planning Commission at the January 2008 meeting, at which time staff can respond to specific issues raised concerning provisions contained in the proposed draft standards.

- **List of key areas where the existing SMP does not meet current State Guidelines.** Please refer to this [handout](#) which detailed some of the key new requirements found in the Guidelines.
- **Provisions for replacement bulkheads.** It is important to recognize that City standards addressing shoreline stabilization must respond to the WAC requirements for no net loss, as well as additional specific standards that have been established in **WAC 173-26-231(3)** addressing shoreline stabilization. These provisions address both no net loss, but also items concerning the need for geotechnical reports and an evaluation of alternative stabilization techniques. A copy of these standards was provided as Attachment 1 to the November 20, 2008 packet. In addition, specific references to the applicable provisions were contained within the November 20, 2008 memorandum.
- **Native plantings and deferring review to state and federal agencies.** Staff is proposing to incorporate vegetation standards as one of several mitigation measures for new bulkheads. The standards anticipated would be similar to those required under State and federal permitting and provisions could be included to allow for acceptance of alternate plans with equivalent function that have been approved by federal or state permitting agencies.

- **Dimensional standards for piers.** Staff has not yet presented draft regulations for piers and, as a result, the comments you provided are not in response to any specific provisions proposed by staff, but will be considered by staff as regulations are drafted for future review.

With that said, the Department of Ecology has provided specific guidance for addressing piers in the recent letter issued, which has been recommended that the City review and incorporate into our SMP. The letter states “In order to meet the no net loss requirement, jurisdictions updating their SMP’s must consider the cumulative impacts of future allowed shoreline uses. Specific to Piers/Docks, jurisdictions will need to refer to specific development standards as a basis for evaluating the build-out potential allowed through future implementation of the updated SMP. This analysis of cumulative impacts must consider the potential risks to shoreline ecological functions if the shoreline were to be fully developed to the maximum intensity allowed through the updated SMP.

Therefore, **specific to new Piers/Docks, dimensional standards must be proposed as part of the updated SMP. Without specific standards, there would be no certainty in local projections of future (planned) shoreline uses and their impacts and hence no justification that the no net loss standard will be achieved.”**

While staff will be evaluating opportunities for flexibility where possible, it appears that DOE will be looking for specific dimensional standards as part of the updated regulations addressing piers and docks. DOE has consistently directed other local governments engaged in SMP updates to provide dimensional standards as well.

- **Inventory.** Please note that the City has completed an extensive inventory of existing shoreline conditions, including a characterization of existing shoreline vegetation, overwater coverage, and other features, which is summarized in the [Final Kirkland Shoreline Analysis Report](#). This information will be used to gauge baseline conditions in order to determine whether or not the City’s plan will meet the State’s no net loss provisions.
- **No net loss.** Under the State Guidelines, the City is obligated to anticipate future shoreline uses including any associated impacts, which **may require more stringent development standards, jurisdiction-wide restoration provisions, or a combination of these approaches** to maintain no net loss. Restoration of impaired ecological functions will likely need to be included in the evaluation of no net loss to help offset impacts introduced from new planned shoreline development allowed in the updated SMP.

- **Federal and state permitting.** The overview of state and federal permitting has been provided in the Planning Commission October 9, 2008 memo in order to provide additional background information and context for the public and Planning Commissioners. It is important, however, to distinguish that the **federal permitting standards for review are different than those contemplated in the State Guidelines and do not eliminate the need for the City's SMP to contain specific provisions** addressing shoreline uses and shoreline modifications. The State Guidelines are focused on evaluating, minimizing, and ensuring no net loss of shoreline ecological functions, which is a different standard than used by the federal agencies as part of ESA consultation. Further, the City's SMP needs to contain specific standards to ensure no net loss and cannot defer to other review processes and standards implemented by other regulatory agencies.

DOE has advised cities that without specific standards, there would be no certainty in local projections of future (planned) shoreline uses and their impacts and hence no justification that the no net loss standard will be achieved. Thus, while the City is interested in better coordinating with other permitting processes and ensuring better consistency in standards, the City must still include regulations in the new SMP that adequately respond to the no net loss provisions, any additional specific provisions provided in the WAC Guidelines, as well as special local issues of importance to the Kirkland community.

- **Replacement of hard structural shoreline stabilization structures.** Replacement of hard structural shoreline stabilization structures located directly behind existing bulkheads, as described in a comment letter, do not avoid or minimize the long-term impacts associated with hard structural shoreline features and are proposed by staff to be handled as replacement structures. The approach described in a comment letter would differ from setting back a bulkhead from the ordinary high water mark, coupled with beach enhancement, which is an approach that can be used to minimize impacts. Besides avoiding some state and federal permitting, the primary benefit of replacing an existing bulkhead behind the existing bulkhead and then removing that existing bulkhead is to minimize short-term construction-related impacts.
- **Management of City property.** The City is using the new fish friendly design standards as part of its shoreline park maintenance and park development activities. These include, but are not limited to:
 - **Acquisition and protection of high quality resource areas.** The City has been acquiring property in natural resource areas such as Yarrow Bay wetlands in order to protect these lands and the important shoreline ecological functions they provide.

- **Restoration of important habitat areas.** As part of the implementation of the Juanita Beach Master Plan, the City is completing significant stream improvements to Juanita Creek.
 - **Reduction in shoreline armoring.** As part of planned renovation of waterfront parks, the City will be pursuing opportunities to conduct shoreline restoration. For instance, as part of the Waverly Park renovation project funded under CIP#PK 0087 000, the City is planning shoreline restoration work.
 - **Enhancement of shoreline vegetation.** The Kirkland Parks Department has also initiated a program to install water intakes in Lake Washington for use as irrigation of Kirkland Parks. The water withdrawn from Lake Washington by Parks would be used to irrigate eight shoreline parks, which are currently provided with irrigation water from the City's potable water system. In conjunction with this project, the Parks Department plans to install vegetation along the shoreline edge.
 - **Reduction in overwater coverage.** The City is replacing portions of existing dock decking material with new fish friendly surfacing materials as part of CIP#PK 0125 000. This work will occur within Marina Park, Marsh Park and David E. Brink Parks. In addition, the City has obtained a Hydraulic Project Approval from the Washington Department of Fish and Wildlife to cover maintenance activities on City piers and, as part of this permit, grating will be installed in lieu of existing solid boards when the boards are replaced, allowing for greater light transmission through these overwater structures.
 - **Use of Integrated Pest Management (IPM) principles.** IPM is a sustainable approach to managing pests by combining cultural, mechanical, biological and chemical methods in a way that provides effective and efficient maintenance of the City's park system and reduces or eliminates use of chemical methods that may impact water quality.
 - **Control of invasive vegetation.** Efforts to control invasive vegetation, including eradication and replanting with native vegetation, within Juanita Bay Park, under the recommendations contained within the *Juanita Bay Park Vegetation Management Plan* prepared in 2004 by Sheldon & Associates Inc.
 - **Application of regulations to public properties.** Please note that all new SMP standards will apply equally to the City, as an owner of property along the shoreline. City-owned properties will be subject to the same standards for shoreline stabilization and piers and docks as private property owners.
- **Restoration opportunities.** As part of the Restoration Plan that will be prepared as a component of the SMP, the City will be researching opportunities and priorities for restoration planning along Kirkland's

shoreline. The Restoration Plan will include mechanisms and strategies for achieving restoration goals that the City establishes. This is different from the mitigation standards that may be necessary within the regulations in order to meet no net loss.

VII. ATTACHMENTS

1. Summary of City Approaches
2. Excerpts from [Final Kirkland Shoreline Analysis Report](#)
3. Conceptual Approach 3 for shoreline setbacks in Residential – L shoreline environment
4. Conceptual Approach 4 for shoreline setbacks in Residential – L shoreline environment
5. Excerpts from Skagit County Review of Scientific Literature for Riparian Buffers
6. Shoreline Setback Provisions
7. Examples of Shoreline Setbacks
8. Draft General Regulations
9. Draft Shoreline Use Regulations
10. Summary of existing zoning and shoreline standards
11. Draft Shoreline Modification Regulations
12. Letter from Dave Douglas dated November 17, 2008
13. Letter from Bob Style dated November 18, 2008
14. Letter from Dave Douglas dated November 24, 2008
15. Letter from Mark Nelson dated November 24, 2008
16. Letter from Bob Style dated November 25, 2008

cc: File No. ZON06-00017, Sub-file #1

City of Kirkland: Shoreline Restoration Analysis

City of Redmond	Lake Forest Park	City of Sammamish	City of Bellevue
<p>Development Standard Nonconformances (e.g. setbacks, lot coverage, etc.) Provisions do not address restoration.</p>	<p>Provisions do not address restoration.</p>	<p>(c) Voluntary remodel, reconstruction, or renovation of an existing, legally established non-conforming structure is allowed provided that the remodel, reconstruction, or renovation does not increase the degree of non-conformity subject to the following criteria: (i) If the total area proposed for voluntary remodel, reconstruction, or renovation is less than fifty percent (50%) of the original structure area (total square feet), property owner(s) would need to restore an equivalent portion of the shoreline buffer to offset the impact, such that the area of the reconstruction and/or addition is equal to the area of shoreline buffer restoration and/or enhancement. (ii) If the total area of modification is greater than fifty one percent (51%) of the existing structure and is less than or equal to seventy-five percent (75%) of the existing structure, the property owner(s) would be required to restore and/or enhance all available shoreline buffer area to offset the impact. (iii) If the total area of modification is greater than seventy-five percent (75%) of the existing structure, the property owner(s) would need to relocate the structure to conform with the required buffer and setback provisions.</p>	<p>Provisions do not address restoration.</p>
<p>Setback/Buffer Flexibility The waterfront-building setback along</p>		<p>1. Single Family Residence</p>	<p>45 Foot Standard Buffer from Removal of bulkheads is a</p>

City of Redmond	Lake Forest Park	City of Sammamish	City of Bellevue
<p>Lake Sammamish shall be a minimum of 35 feet. The building setback can be reduced to 20 feet if the setback area is revegetated with primarily native vegetation. Establishment of a tree canopy is encouraged. No constructed structures other than those required for waterfront access/docks are allowed within the 20-foot setback. New development adhering to the 35-foot setback and/or reconstruction that involves greater than 50% the value of existing improvements shall be required to plant 50% of the area in the minimum 20 foot building setback with native vegetation.</p>	<p>Setbacks</p> <p>a. A fifty (50)-foot standard setback shall be established from the ordinary high water mark of Lake Washington for all lots that are greater than or equal to one hundred (100) feet in depth. A forty (40)-foot standard setback shall be established from the ordinary high water mark of Lake Washington for all lots that are less than one hundred (100) feet in depth.</p> <p>b. The Lake Washington setback may be reduced down to a minimum of twenty (20) feet, when setback reduction impacts are mitigated using a combination of the mitigation options provided in the table below to achieve an equal or greater protection of lake ecological functions. At least one Water Related Action must be undertaken in order to achieve the full setback reduction allowed.</p> <p>1) For lots less than one hundred (100) feet in depth, a maximum of 10 feet in cumulative setback reduction may be achieved under Upland Related Actions; or</p> <p>2) for lots greater than or equal to one hundred (100) feet in depth, a maximum of 15 feet in cumulative setback reduction may be achieved under Upland Related Actions.</p>	<p>OHWM</p> <p>Buffer Can be No Less Than 15 Feet.</p> <p>Buffer Reduction Only When Mitigation Results in Equal or Greater Protection of Lake Functions.</p> <p>Variety of reduction alternatives, including removal of existing bulthead, preservation or restoration of native vegetation, preparation of vegetation management plan that limits applications of herbicides, pesticides, and fertilizers, and limiting lawn cover.</p>	<p>preferred mitigation for dock installation and buffer encroachment.</p>
<p>Landscaping within Shoreline (1) Landscaping Within Shoreline Buffers and Waterfront Building Setbacks. Within shoreline buffers, landscaping shall meet the additional requirements of RCDCG 20D.140.30-040, Wetlands</p>	<p>Preservation of existing natural shoreline conditions (e.g., no bulkhead or other unnatural shoreline features such as upland impervious surfaces or other structural alterations) within 5</p>	<p>See setback reduction provisions.</p>	<p>Provisions do not address restoration, except as needed to restore vegetation impacted by development activities.</p>

City of Redmond	Lake Forest Park	City of Sammamish	City of Bellevue
<p>Performance/Design Standards in RCDG 20D.140.20-060, Riparian Stream Corridor Performance Standards.</p> <p>(2) Landscape Area Requirements. In Business (CO, CB, NC & GC) zones, 25% of the site shall be landscaped. In the Business Park Zone, 22% of the site shall be landscaped if the site is less than one acre and 20% of the site shall be landscaped if the site is one acre or larger in size. In Industrial (MP & I) zones, 20% of the site shall be landscaped if the site is less than one acre and 18% of the site shall be landscaped if the site is one acre or larger in size. In multi-family residential zones (R12, R18, R20 & R30), 50% of the site shall be landscaped. Vegetated buffers may be used to meet the site area landscaping requirements.</p> <p>(3) Screening of Storage and Service Areas.</p> <p>(a) All outdoor storage areas shall be screened on all sides, pursuant to 20D.120.10-040, Screening.</p> <p>(b) All vehicle use areas located adjacent to, or visible from public parks or open space, the water body, or shoreline trails or public access features shall be screened from the water body, shoreline trails and public access features. Screening is intended to create a visual separation that is not necessarily 100% sight-obscuring. Plantings shall be evergreen or a mixture of deciduous trees with large shrubs and groundcover interspersed with trees and/or a decorative wall or fence. Plantings shall include a minimum of 60% evergreen trees and shrubs.</p> <p>(c) Rooftop mechanical equipment shall be screened from the water body, shoreline trails and public access</p>	<p>feet of the OHWM, including preservation of existing native vegetation. [in exchange for a 10-foot buffer reduction]</p> <p>Preservation of existing trees and native vegetation and restoration of native vegetation, as necessary in at least 75 percent of the remaining Lake Washington setback area. Up to 25 percent of the setback area can be comprised of existing non-invasive, non-native vegetation. Up to 25 percent of the lake frontage may be used for improved shoreline access, provided in no case shall access be restricted to less than 15 feet of frontage and access areas are located to avoid areas of greater sensitivity and habitat value. (Note: this incentive cannot be used by any properties that currently have native vegetation in 75% of the remaining setback area. The reduction would only be granted if ecological functions would be improved relative to the existing condition.)</p> <p>[in exchange for a 10-foot buffer reduction]</p>		

City of Redmond	Lake Forest Park	City of Sammamish	City of Bellevue
<p>features. Rooftop screening shall be at least as high as the equipment being screened, shall be of a material and design compatible with the building, and shall surround the building. Screening shall comply with the additional standards of 20D.120.20-010, Rooftop Mechanical Equipment Screening.</p> <p>(d) Garbage and trash receptacles shall be screened from the water body, shoreline trails and public access features. Screening shall be of a material and design compatible with the associated structure and shall be at least as high as the receptacle. Screening shall meet the standards of 20D.120.20-030, Garbage and Trash Receptacle Screening.</p>			
<p>Native Plants (4) Use of Native Plants. Landscaping within the shoreline jurisdiction shall incorporate a minimum of 50% native plants. All plantings within the shoreline buffer shall consist of native plant material. Native plantings are encouraged to be placed closest to the waterbody.</p>	<p>Restoration of any shoreline or streambank that has been disturbed or degraded shall use native plant materials, unless such restoration occurs within a developed and maintained ornamental landscape, in which case noninvasive plant materials similar to that which most recently occurred on-site may be used.</p> <p>In all cases where clearing is followed by revegetation, native plants shall be preferred. Extensive lawns are discouraged due to their limited erosion control value, limited water retention capacity, and associated chemical and fertilizer applications.</p>	<p>See setback reduction provisions.</p>	<p>Provisions do not address restoration, except as needed to restore vegetation impacted by development activities.</p>

Lake Forest Park Example – confluence of vegetation conservation with shoreline setbacks in single-family residential areas.

1. Single Family Residence Setbacks
 - a. A fifty (50)-foot standard setback shall be established from the ordinary high water mark of Lake Washington for all lots that are greater than or equal to one hundred (100) feet in depth. A forty (40)-foot standard setback shall be established from the ordinary high water mark of Lake Washington for all lots that are less than one hundred (100) feet in depth.
 - b. The Lake Washington setback may be reduced down to a minimum of twenty (20) feet, when setback reduction impacts are mitigated using a combination of the mitigation options provided in the table below to achieve an equal or greater protection of lake ecological functions. At least one Water Related Action must be undertaken in order to achieve the full setback reduction allowed.
 - 1) For lots less than one hundred (100) feet in depth, a maximum of 10 feet in cumulative setback reduction may be achieved under Upland Related Actions; or
 - 2) for lots greater than or equal to one hundred (100) feet in depth, a maximum of 15 feet in cumulative setback reduction may be achieved under Upland Related Actions.
 - c. All property owners who obtain approval for a reduction in the setback must record the final approved setback and corresponding conditions in a Notice on Title, and provide a copy of the Notice on Title to the Shoreline Administrator.
 - d. All property owners who obtain approval for a reduction in the setback must prepare, and agree to adhere to, a shoreline vegetation management plan prepared by a qualified professional and approved by the Shoreline Administrator that includes appropriate limitations on the use of fertilizer, herbicides and pesticides as needed to protect lake water quality. This plan shall be added to a Notice on Title, and a copy of the Notice on Title provided to the Shoreline Administrator;
 - e. Restoration of native vegetation as discussed below shall consist of a mixture of trees, shrubs and groundcover and be designed to improve habitat functions. Preparation of a revegetation plan shall be completed by a qualified professional and include a monitoring and maintenance program that shall, at a minimum, include the following:
 - 1) The goals and objectives for the mitigation plan;

- 2) The criteria for assessing the mitigation;
 - 3) A monitoring plan that includes annual progress reports submitted to the Shoreline Administrator and that lasts for a period sufficient to establish that performance standards have been met as determined by the Shoreline Administrator, but no less than five years; and
 - 4) A contingency plan.
- f. Whenever the Shoreline Administrator determines that monitoring has established a significant adverse deviation from predicted impacts, or that mitigation or maintenance measures have failed, the applicant or the property owner shall be required to institute correction action, which shall also be subject to further monitoring as provided in this section.
- g. The Shoreline Administrator may require a performance bond(s) or other security in an amount sufficient to guarantee that all required mitigation measures will be completed in a manner that complies with conditions of approval and to guarantee satisfactory workmanship and materials for a period not to exceed five years. The Shoreline Administrator shall establish the conditions of the bond or other security according to the nature of the proposed mitigation, maintenance or monitoring and the likelihood and expense of correcting mitigation or maintenance failures.
- h. All costs associated with the mitigation/monitoring and planning therefore, including city expenses, shall be the responsibility of the applicant.
- i. The Lake Washington setback may be reduced by the following:

Shoreline Setback Reduction Alternatives

Reduction Mechanism		Reduction Allowance for Lots < 100 feet in depth	Reduction Allowance for Lots ≥ 100 feet in depth
Water Related Actions			
1	Removal of an existing bulkhead covering at least 75 percent of the lake frontage which is located at, below, or within 5 feet landward of the lake's ordinary high water mark (OHWM) and subsequent restoration of the shoreline to a natural or semi-natural state, including restoration of topography, and beach/substrate composition;	15 feet	20 feet
2	Removal of an existing bulkhead covering at least 25	10 feet	15 feet

Reduction Mechanism		Reduction Allowance for Lots < 100 feet in depth	Reduction Allowance for Lots ≥ 100 feet in depth
	percent of the lake frontage which is located at, below, or within 5 feet landward of the lake's OHWM and subsequent restoration of the shoreline to a natural or semi-natural state, including restoration of topography, beach/substrate composition, and vegetation;		
3	Opening of previously piped on-site watercourse to allow potential rearing opportunities for anadromous fish;	10 feet	10 feet
4	Preservation of existing natural shoreline conditions (e.g., no bulkhead or other unnatural shoreline features such as upland impervious surfaces or other structural alterations) within 5 feet of the OHWM, including preservation of existing native vegetation.	10 feet	15 feet
5	Preservation of existing trees and native vegetation and restoration of native vegetation, as necessary in at least 75 percent of the remaining Lake Washington setback area. Up to 25 percent of the setback area can be comprised of existing non-invasive, non-native vegetation. Up to 25 percent of the lake frontage may be used for improved shoreline access, provided in no case shall access be restricted to less than 15 feet of frontage and access areas are located to avoid areas of greater sensitivity and habitat value. (Note: this incentive cannot be used by any properties that currently have native vegetation in 75% of the remaining setback area. The reduction would only be granted if ecological functions would be improved relative to the existing condition.)	10 feet	15 feet
6	Preservation of existing trees and native vegetation and restoration of native vegetation in at least 25 percent of the remaining Lake Washington setback area. Up to 25 percent of the lake frontage may be used for improved shoreline access, provided in no case shall access be restricted to less than 15 feet of frontage and access areas are located to avoid areas of greater sensitivity and habitat value. (Note: this incentive cannot be used by any properties that currently have native vegetation in 25% of the remaining setback area. The reduction would only be granted if ecological functions would be improved relative to the existing condition.)	5 feet	10 feet
Upland Related Actions			
7	Installation of biofiltration/infiltration mechanisms such as bioswales, created and/or enhanced wetlands, or ponds that exceed standard stormwater requirements.	10 feet	10 feet
8	Installation of a "green" roof in accordance with the standards of the LEED Green Building Rating System.	10 feet	10 feet
9	Installation of pervious material for driveway or road construction.	5 feet	5 feet
10	Limiting total impervious surface in the reduced	5 feet	5 feet

Reduction Mechanism		Reduction Allowance for Lots < 100 feet in depth	Reduction Allowance for Lots ≥ 100 feet in depth
	setback area to less than 5 percent.		
11	Preserving or restoring at least 20 percent of the total lot area outside of the reduced setback as native vegetation. No more than 20 percent of the total lot area can be lawn.	5 feet	5 feet

c. Any further setback reduction beyond that allotted in this Section shall require approval of a shoreline variance application.

B. Accessory structures greater than one hundred fifty (150) square feet that are not water-dependent or water-related are prohibited within the residential setback from the OHWM. Accessory structures shall not exceed a maximum height of twelve (12) feet.

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piers, removing pier skirting as feasible, removing or minimizing the impacts of shoreline armoring; removal of unused piles; and improving nearshore native vegetation.

General: Many shoreline properties have the potential for improvement of ecological functions through: 1) reduction or modification of shoreline armoring, 2) reduction of overwater cover and in-water structures (grated pier decking, pier size reduction, pile size and quantity reduction, removal of creosote-treated piles, moorage cover removal), 3) improvements to nearshore native vegetative cover, and/or 4) reductions in impervious surface coverage.

See Section 3.11 for discussion of how identified Opportunity Areas within each segment fits into the larger restoration strategy.

5.0 ANALYSIS of ECOLOGICAL FUNCTIONS and ECOSYSTEM WIDE PROCESSES

5.1 LAKE WASHINGTON WATERSHED

The Lake Washington watershed (Water Resource Inventory Area 08 [WRIA 08]) encompasses 692 square miles, collecting water from two major rivers (Cedar and Sammamish Rivers) before flowing through Lake Union and ultimately into Puget Sound via the Lake Washington Ship Canal and Hiram Chittenden locks. The baseline conditions that aquatic species presently face in Lake Washington result from considerable human alterations of the environment.

The following information is presented to give historical context to the analysis of existing ecological functions and processes (i.e. baseline conditions). The urbanization of the Lake Washington watershed has increased impervious area, reduced forest cover, and increased nutrient and chemical loading to environmentally sensitive areas. These factors eventually contribute to increased storm flows, channel incision, sedimentation, and reduction in water quality, to name a few, ultimately impacting downstream receiving water bodies such as Lake Washington. As previously mentioned, the *Salmon and Steelhead Habitat Limiting Factors Report for the Cedar-Sammamish Basin (Water Resource Inventory Area 8)* (Kerwin 2001) identifies the following five "limiting habitat factors and impacts on Lake Washington:"

- The riparian shoreline of Lake Washington is highly altered from its historic state. Current and future land use practices all but eliminate the possibility of the shoreline to function as a natural shoreline to benefit salmonids;
- Introduced plant and animal species have altered trophic interactions between native animal species;
- The known historic practices and discharges into Lake Washington have contributed to the contamination of bottom sediments at specific locations;
- The presence of extensive numbers of docks, piers and bulkheads have highly altered the shoreline; and
- Riparian habitats are generally non-functional.

The lowering of the lake that resulted from the construction of the Lake Washington Ship Canal and Hiram Chittenden locks (completed in 1916) and the concurrent elimination of the Black

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River and the diversion of the Cedar River into Lake Washington were the most monumental modifications. Lake Union was connected to Lake Washington via the Montlake Cut, and the former outlet to Lake Union was enlarged to form the Fremont Cut. Locating the locks near the western terminus of Salmon Bay converted the formerly saltwater inlet into a freshwater channel, eliminating over 7 km (4 mi.) of estuarine habitat. Lowering Lake Washington and diverting the Cedar River affected both the fish populations and the condition of the habitat. Cedar River fish stocks were locally adapted to a riverine migration and an extensive estuary, instead of the current lengthy lacustrine migration and an abrupt transition between warm, fresh water and significantly colder, more saline conditions below the locks. Lake Washington fish stocks, while accustomed to the lengthy lacustrine migration, were also adapted to an extensive estuary. The approximately 9-foot reduction in lake level eliminated much of the available shallow-water and freshwater marsh habitat, and decreased the length of the shoreline. Chrzastowski (1983) reports a loss of 15.3 km (9.5 miles) of shoreline, and an estimated loss of 410 hectares (1,013 acres) of wetland resulting from the lowering of the lake.

The construction of the Hiram Chittenden locks and subsequent water level regulation in Lake Washington by the Corps eliminated the annual flood-driven seasonal inundation of the shoreline that historically shaped the structure of the vegetation community. The hardstem bulrush- and willow-dominated community that existed prior to 1916 has been replaced by developed shorelines with landscaped yards. The management of the lake level by the Corps to maintain a high water volume throughout the summer and subsequently lowering the lake during the late fall and winter essentially reverses the natural lake hydrograph. This reversal impacts the growth of many species of native terrestrial and emergent vegetation. Conversely, this hydrograph reversal indirectly acts to buffer shorelines from potential wind-driven wave impacts during winter storms. The loss of natural shoreline has reduced complex shoreline features such as overhanging and emergent vegetation, woody debris (especially fallen trees with branches and/or rootwads intact), and gravel/cobble beaches. Evermann and Meek (1897) noted in 1896 that “the shore of Lake Washington is not well adapted to collecting with a seine” due to the abundant submerged woody debris, and dense underbrush, small trees, and tule (hardstem bulrush) that fringed the shoreline. The loss of native shoreline vegetation and wetlands has also reduced allocthonous input of detritus and terrestrial insects.

The woody debris, once abundant along the shoreline of Lake Washington in its historical condition has been replaced with structurally simple piers. A survey of 1991 aerial photos estimated that 4 percent of the shallow-water habitat within 30.5 m of the shore was covered by residential piers (ignoring coverage by commercial structures and vessels) (Malcom, pers. comm., 22 November 1999). A study conducted in 2000 reported that there were 2,737 docks in Lake Washington, and that approximately 71 percent of the shoreline was armored (Toft 2001). The loss of complex habitat features (i.e., woody debris, overhanging vegetation, emergent vegetation), and shallow-water habitat in Lakes Washington and Sammamish has reduced the availability of prey refuge habitat and forage for juvenile salmonids. As NOAA Fisheries- and USFWS-mandated standard conservation measures are implemented with individual shoreline projects, and bioengineering methods and other “fish-friendly” designs for shore protection are adapted to lakeshore use, the condition of the Lake Washington shoreline, in terms of fish and wildlife habitat may improve over time. However, the present availability of quality shoreline habitat for salmonids and their prey species remains substantially below its historical level. Recent and ongoing efforts to address the concern of growth management within the watershed

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and facilitate recovery efforts for salmon and salmon habitat, specifically for chinook salmon, include working with local jurisdictions to implement shared strategies for salmon recovery (WRIA 8 Steering Committee 2005; WRIA 8 Steering Committee 2002).

While water quality in Lake Washington is often considered moderate to good, the present state is a tremendous improvement from its condition just 50 years ago. Prior to the formation of Metro (now part of King County's Department of Natural Resources and Parks) in 1958, local sewage treatment plants around Lake Washington discharged effluent directly into the lake, resulting in large cyanobacteria (*Oscillatoria rubescens*) blooms that made the lake unsafe for recreation. After the construction of regional wastewater treatment facilities in Renton and at West Point in Seattle, effluent discharges dropped from approximately 20 million gallons per day to zero (Edmondson 1991). The subsequent reduction in phosphorus loading from the effluent discharges resulted in relatively immediate improvements to the lake's water quality. While water clarity was measured to be only 30 inches in 1964, clarity improved to 10 feet by 1968, reaching 25 feet by 1993.

A key feature of urban areas is impervious surface coverage. Increases in impervious surface coverage, and the consequent reduction in soil infiltration, have been correlated with increased velocity, volume and frequency of surface water flows. This hydrologic shift alters sediment and pollutant delivery to streams and ultimately to downstream receiving water bodies (Booth 1998; Arnold and Gibbons 1996). Increased surface water flows associated with impervious surface coverage of suburban areas (20-30%) has been linked to decreased bank stability and increased erosion (May et al. 1997a). Knutson and Naef (1997), in their literature review, concluded that as little as 10 percent impervious surface coverage is sufficient to alter streambank stability and erosion. Changes in hydrology and stream morphology brought on by impervious surfaces have also been linked to shifts in macroinvertebrate community composition, which could have profound and far-reaching impacts on the productivity of a watershed (Pederson and Perkins 1986, as cited in Leavitt 1998). Changes in fish assemblages have been correlated with changes in stream temperature and base flow as a result of increased impervious surface coverage (Wang et al. 2003). Increases in flood frequency and volume have been correlated to declining salmon populations in some Puget Sound lowland streams (Moscrip and Montgomery 1997). Riparian areas can protect against these factors by moderating surface water and sediment inputs. However, while riparian quality has been shown to be inversely proportional to the level of urbanization (May et al. 1997b), impervious surface area alone is not the only component to predicting stream biological conditions (Booth et al. 2004).

Many concerns have arisen in recent years over the impacts from the urbanization of predominantly forested areas, especially areas which contain erosion-susceptible geologic substrate and relatively high gradients (Booth and Henshaw 2001). Booth et al. (2002) conclude that under typical rural land uses, impacts to watershed ecology from reduced forest-cover area can be as great or greater than similar increases in impervious area. Threshold levels of 10 percent impervious coverage and 35 percent deforested area have been found to mark a distinct transition towards severely degraded stream conditions (Booth 2000).

In general, development is known to have detrimental effects on salmonids, particularly with spawning abundance and success. Pess et al. (2002) found that wetland occurrence, local geology, stream gradient, and land use were significantly correlated with adult coho salmon

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abundance. While positive correlations were found between spawner abundance and forested areas, negative correlations were found between spawner abundance and areas converted to agriculture or urban development. Fish species diversity has been found to decline with increasing levels of urban development, while cutthroat trout tend to become the dominant salmonid species (Lucchetti and Fuerstenberg 1993; Ludwa et al. 1997). The WRIA 8 Steering Committee has recently recognized the need to restore coho salmon spawning habitat in order to reduce the population of cutthroat trout, a known predator of juvenile chinook salmon (WRIA 8 Steering Committee 2005).

The remainder of this discussion describes the baseline conditions within Lake Washington in terms of the following parameters as enumerated by NOAA Fisheries' draft Lake Matrix of Pathways and Indicators established for chinook salmon (Table 17): 1) water quality, 2) habitat access, 3) habitat elements, 4) shoreline conditions.

Table 17. Checklist for Documenting Environmental Baseline of Relevant Indicators – Draft modified by NOAA Fisheries for lakes.

PATHWAYS	SUMMARY OF LAKE WASHINGTON CONDITIONS
INDICATORS	
Water Quality	
Temperature/Dissolved Oxygen	At Risk: Surface water temperatures often exceed the critical threshold for juvenile salmonids, creating inhospitable shallow nearshore areas typically between July and October. However, juvenile salmonids are not likely to be present in the nearshore at this time of year. Conversely, DO rarely falls below acceptable levels in surface waters (1-10m). However, DO concentrations below dense growths of aquatic macrophytes, Eurasian milfoil in particular, can be lethally low.
pH	At Risk: pH levels are found typically within acceptable levels, but can become higher during the late spring/early summer months.
Chem. Contamination	At Risk: Chemical contamination consists primarily of hydrocarbon input from the urbanized watershed, but the lake has also been on the 303d list for fecal coliform, ammonia, and PCBs.
Nutrients/Total P	At Risk: Nutrient levels in Lake Washington typically do not represent a problem for salmonids. However, localized algal blooms have occurred at various points throughout the lake.
Habitat Access	
Physical Barriers	At Risk: While fish passage is not physically blocked by the locks, the barrier presented by the locks and corresponding fish ladder causes stress and mortality for migrating salmonids.
Habitat Elements	
Exotic Species (in water)	Not Properly Functioning: Many invasive aquatic plants, such as Eurasian milfoil, have become extremely prevalent throughout the lake, often times outcompeting native species and reducing overall structural complexity.
Shoreline Upwelling/Downwelling	Not Properly Functioning: The extent of shoreline armoring has reduced the natural influx of gravel via erosion processes and increased rates of sediment transport, which in turn has decreased the extent of shoreline upwelling/downwelling.

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PATHWAYS	SUMMARY OF LAKE WASHINGTON CONDITIONS
INDICATORS	
Structural Complexity (LWD/emergent/submergent vegetation)	At Risk: Much of the loss in structural complexity dates back to the lowering of the lake by the U.S. Army Corps of Engineers during construction of the Hiram Chittenden Locks. The manual control of the lake elevation and the subsequent reversal of the natural hydrograph does not support the natural establishment of emergent vegetation similar to the historical condition. Shoreline development has decreased shoreline vegetation and subsequently removed and prevented further additions of LWD.
Substrate Composition	Not Properly Functioning: Due to the extent of shoreline armoring around Lake Washington, which effectively limits the natural erosion processes leading to sediment transport, the composition of most shoreline substrates do not contain habitat suitable to most salmonids. The extensive armoring also results in a lack of habitat structure used for rearing and allochthonous inputs necessary to support foraging. Juvenile salmonids primarily feed on aquatic and terrestrial invertebrates. The lack of overhanging and emergent vegetation limits allochthonous input of both detritus and invertebrates.
Shoreline Conditions	
Shoreline Vegetation and Riparian Structure	Not Properly Functioning: Residential development around much of the lakeshore has resulted in a general lack of shoreline vegetation and riparian structure. The historical shoreline of Lake Washington included a mix of willow, dogwood, and other large shrubs along with upland conifers. The development of the lakeshore has effectively removed this native vegetation and replaced it with small shrubs and grass lawns, neither of which provide the habitat complexity of the historical shoreline.
Shoreline Gradient	Not Properly Functioning: Similar to the concerns regarding Shoreline Upwelling/Downwelling and Substrate Composition, Shoreline Gradient has also been negatively affected by shoreline armoring.

1. **Water Quality:** In general, Lake Washington surface water temperatures between 1 and 10 meters deep exceed 17°C from July to October. This temperature appears to be a critical threshold for the distribution of juvenile anadromous salmonids. The expectation is that shallow nearshore areas of Lake Washington would be inhospitable for bull trout and juvenile chinook and coho salmon during periods of high temperatures.

Conversely, dissolved oxygen (DO) levels rarely fall below 8 mg/L at similar depths. DO levels below 4 mg/L are considered dangerous for salmonids. Thus, ambient DO levels exceed acceptable levels for salmonids. However, DO concentrations below dense growths of aquatic macrophytes, Eurasian water-milfoil in particular, can be lethally low (Frodge et al. 1995).

From 1995 through 2000, measures of pH at a 1-meter depth (King County Metro monitoring station 0840) were typically between 7 and 9, exceeding 8.5 during most years in the late spring/early summer months. A pH of 9 was exceeded one time in May of 1999. At 10-meter depths, pH was never measured above 9. Other water quality concerns include chemical contaminants and fecal coliform levels. Lake Washington was on the U.S. EPA 2004 303(d) list for fecal coliform at fifteen sample locations, ammonia at two locations, and polychlorinated biphenyls (PCBs) at one location. Chemical contamination of the waters of

Lake Washington consists primarily of hydrocarbon input from the urbanized watershed. Wakeham (1977) computed a hydrocarbon budget for Lake Washington and determined that the majority of the hydrocarbons were from stormwater runoff either directly to the lake or via rivers, while 85 percent of the hydrocarbon removal is via sedimentation. Wakeham (1977) indicated that the primary source of hydrocarbons in the urban runoff to Lake Washington is automotive, both oil and grease, and products of combustion (polycyclic aromatic hydrocarbons - PAHs); outboard engine operation likely contributes a very small fraction of total input (less than 1%). PAHs are a common pyrolytic byproduct of all internal combustion engines and are now commonly found in most aquatic systems, near industrialized and urbanized centers (Green and Trett 1989).

Overall, relatively little is known about the impacts of PAHs to aquatic organisms. Arkoosh et al. (1998) reported evidence for immunosuppression resulting from exposure to PAHs, determining that chinook smolts from urban estuaries (Duwamish) exhibited a higher cumulative mortality after exposure to the marine pathogen *Vibrio anguillarum* than smolts from a non-urban estuary. Tissue examinations of the chinook smolts indicated that those from the urban estuary had been exposed to higher levels of PAHs and PCBs than smolts from the non-urban estuary (Arkoosh et al. 1998).

Present nutrient levels in Lake Washington do not represent a problem for salmonids. Total phosphorus, as measured from 1995 through 2000 at Metro station 0840, varied little between seasons, and has generally been below 4 mg/L.

The *Final Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan* listed Lake Union, the Ship Canal and the Sammamish River as waterbodies with degraded water quality, but did not include Lake Washington (WRIA 8 Steering Committee 2005). The *Lake Washington Existing Conditions Report* (Tetra Tech ISG, Inc. and Parametrix, Inc. 2003) summarizes and analyzes 12 years of water quality data. The Report concludes the following:

“Overall, Lake Washington has recovered from the eutrophic, over enriched state that existed in the 1950s to 1960s. The key to rapid recovery was the lake’s depth, which contained large stores of dissolved oxygen and the reduction in P loading that occurred with sewage diversion. The lake is sensitive to P loading, and the maintenance of present-day water quality is dependent on keeping P loading at or below current levels. Minimal development of the Cedar River basin has been a key factor in recovery and maintenance of lake water quality.”

2. **Habitat Access:** The Hiram Chittenden Locks represent a barrier to fish passage by creating a combination of physical and biological obstacles to fish migration. While fish passage is not physically blocked by the locks, the physical and biological obstacles that the locks create, result in a significant level of stress and mortality for adult and juvenile salmonid migrants.
3. **Habitat Elements:** Exotic aquatic plant and animal species inhabit much of the Lake Washington system. Milfoil and fragrant white water lily are exotic aquatic macrophytes in Lake Washington that have demonstrated a negative affect on fish on occasion (Frodge et al.

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1995). Reduced DO levels and consequent fish mortality has been observed within dense patches of either species in shallow, poorly circulating water (Frodge et al. 1995). Low DO conditions under aquatic macrophytes have only been observed in small lakes or in sheltered bays of Lake Washington. Yellow perch, brown bullhead, smallmouth bass, and largemouth bass are exotic predators with the potential to prey on juvenile chinook and coho salmon. Yellow perch utilize "non-structural" areas (Paxton and Stevenson 1979) and brown bullhead are benthic foragers, and are thus less likely than bass to utilize developed areas. Yellow perch of piscivorous size are also generally limnetic. Largemouth bass are the most likely exotic predators in nearshore areas because of the abundant aquatic vegetation. Observing where sockeye salmon beach spawn best identifies the presence of shoreline upwelling or downwelling in Lake Washington. While sockeye spawning locations have been mapped by WDFW, very little beach spawning has been documented in recent years. Shoreline hardening and the lack of erodible soils and subsequent sediment drift has likely resulted in a negative impact to shoreline upwelling/downwelling conditions.

Structural complexity in Lake Washington currently consists of submerged aquatic macrophytes, some small and large woody debris primarily located along undeveloped shorelines, and piers or other man-made in-water structures. The lake is generally lacking in structural complexity relative to natural shorelines. The implications for juvenile salmonids are that the present lack of complex structure throughout most of Lake Washington provides an advantage to large piscivorous fish.

Substrate composition throughout Lake Washington is influenced by shoreline hardening, which restricts erosional sediment input. Without supplemental substrate to cover and replace contaminated areas, exposed areas with high levels of PCBs and PAHs may be available to impact the aquatic food chain. Although not specifically studied in Lake Washington, immunosuppression responses have been observed in salmonids migrating through similar Puget Sound urban areas (Arkoosh et al. 1998). Lake Washington was on the U.S. EPA 1998 303(d) list for sediment bioassay at one location near the mouth of May Creek and the 2004 303(d) list of PCBs for one location near the north end of Lake Washington. While these locations are not specifically along the City or PAA shoreline, they are within the same waterbody and can affect the aquatic food chain lake-wide. Thus, discussion of water quality impacts, especially those derived by anthropogenic effects, is warranted.

4. **Shoreline Conditions:** The urbanization of the Lake Washington shoreline has resulted in a shoreline generally lacking native vegetation. There are very few sources of woody debris recruitment that remain and these are primarily associated with the only remaining undeveloped shorelines. The result is a lack of habitat structure used for rearing and allochthonous inputs necessary to support foraging. Juvenile salmonids primarily feed on aquatic and terrestrial invertebrates. The lack of overhanging and emergent vegetation limits allochthonous input of both detritus and invertebrates.

Although smallmouth and largemouth bass are known to prefer natural cover types like brush, logs, aquatic vegetation, or boulders (Stein 1970), these adaptive species readily utilize floating docks and the support piles of piers in the absence of natural cover types. Artificial structures and cover types that promote shade or darkness are frequently favored by yearling bass species (Haines and Butler 1969; Bassett 1994). Bass species are known to select low-gradient, shallow-water (0.6-1.5 meters), silty to gravelly habitats near structural features for spawning (Pflug 1981; Heidinger 1975; Allan and Romero 1975), and prefer similar habitat types near cover while foraging or resting (Vogele and Rainwater 1975). Although the habitat preferences of largemouth and smallmouth bass are generally similar, smallmouth bass generally select drop-offs or outcroppings, cover in the form of logs or rocks, and hard substrates without aquatic vegetation (Pflug 1981; Pflug and Pauley 1984), whereas largemouth bass generally prefer softer-bottom substrates and aquatic macrophytes (Coble 1975). These aspects of bass ecology are consistent with observations of bass behavior from across their geographic range (Bryan and Scarnecchia 1992; Kraai et al. 1991; Bassett 1994).

Logs, brush, or other pieces of large wood are rare along developed sections of the shoreline within the City of Kirkland. Piers provide alternative sources of shade, overhead cover, and in-water structure (piles and boatlifts) that attract bass (Fresh et al. 2003). Piers and piles differ from natural cover/structure elements, such as brush piles, primarily in their lack of structural complexity. This difference is critical for prey fish, which rely on structural complexity for avoidance cover in the presence of predators. In developed lakes, piers become the dominant structural features, at the expense of natural complex structures such as woody debris and emergent vegetation (Bryan and Scarnecchia 1992; Poe et al. 1986; Lange 1999). In areas of Lake Washington where smallmouth bass are present, they preferentially select habitats beneath piers and near in-water support pilings (Fresh et al. 2003). Lake Washington smallmouth concentrations tend to be highest around large docks extending over deeper water, equipped with skirting and numerous support piles. Management plans designed to minimize any advantage non-native predators hold over juvenile salmonids in the littoral zone of Lake Washington should also seek to minimize the amount of overwater cover and support structure associated with pier or dock projects along the shoreline.

5.3 CITY OF KIRKLAND SHORELINE JURISDICTION

5.3.1 *Summary of City's Analysis*

The segment-specific discussion in Section 4 adequately summarizes existing conditions for most of Kirkland's shoreline jurisdiction, including the PAA. Section 5.1 presents lake-wide conditions and function/process performance, with the latter organized per NOAA Fisheries' draft *Lake Matrix of Pathways and Indicators* established for chinook salmon (see Table 17). The latter discussion is focused on the aquatic lake environment, not the associated upland shoreline areas. The following discussion ties together Sections 4 and 5.1 consistent with the lake function delineation as presented in WAC 173-26-201(3)(d)(i)(C) and the processes outlined in WAC 173-26-201(3)(d)(i)(D). Table 18 summarizes the performance of ecological functions of Segments A, C and D. Segment B (Juanita Bay and Yarrow Bay Wetlands) is a notable exception, and is summarized in Table 19.

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Table 18. Function Summary of Segments A, C and D.

Function	Performance
Hydrologic	
Storing water and sediment	LOW-MODERATE: The lake of course provides excellent water and sediment storage functions. However, the uplands have low water and sediment storage functions. Impervious surfaces and compact managed lawns interfere with infiltration of precipitation and rapidly send water "downstream." Wetlands and other natural water and sediment storage features are generally lacking.
Attenuating wave energy	LOW: The changes to the lake elevation per the 1916 modifications made the nearshore environment generally steeper, with less opportunity for gradual nearshore slopes to attenuate wave energy. Bulkheading and other shoreline modifications have further steepened the nearshore. However, the reversal of the natural lake hydrograph has ameliorated the affects somewhat.
Removing excess nutrients and toxic compounds	LOW: The upland shoreline areas are more often a source of nutrients and toxic compounds, via lawn treatment runoff (pesticides, fertilizers, herbicides) and road runoff (hydrocarbons, metals).
Recruitment of LWD and other organic material	LOW: Upland modifications restrict the ability of the lake to recruit LWD and organic material.
Vegetation	
Temperature regulation	LOW: Lack of dense shoreline vegetation eliminates potential for some shading of the shallow-water nearshore area. However, most of the City's shoreline is west-facing, so afternoon sun may be a larger factor in nearshore water temperatures than the absence of vegetation.
Water quality improvement	LOW: Residential areas dominated by lawn and landscaping, but without dense buffers of lakeside vegetation, are sources of water quality contaminants such as fertilizers, herbicides and pesticides. In Segment D, runoff from the urban impervious surfaces is also not filtered through any vegetation. In addition to the residential pollutants, urban runoff carries hydrocarbons, metals, sediments and other pollutants from roads and parking lots.
Attenuating wave energy	LOW: Prior to construction of the Locks and subsequent lowering of the lake elevation, the lake was ringed with emergent wetlands and mature mixed-forest communities. Those communities are now almost entirely absent in these segments, so vegetation does not provide any significant wave attenuation function.
Sediment removal and bank stabilization	LOW: Under natural conditions, there would be a certain rate of shoreline erosion, which is essential to maintaining substrate conditions. This rate would be partially determined and moderated by the presence of shoreline vegetation whose root systems would hold bank material in place. Instead, these segments have little shoreline vegetation and approximately 76-90% of the shoreline is armored. While this "stabilizes" the banks, it limits natural recruitment of lakebed materials. Non-armored banks did not appear to be unstable.
LWD and organic matter recruitment	LOW: Again, loss of shoreline vegetation other than lawn and some landscaping has largely eliminated large woody debris and organic matter recruitment potential within these segments. Any trees or large debris that do enter the lake are likely to be quickly removed to reduce risk of property damage or harm to humans.

Function	Performance
Hyporheic	
Removing excess nutrients and toxic compounds	LOW-MODERATE: The hyporheic zone is restricted by extensive shoreline armoring, but likely does provide some nutrient and toxic compound removal when water from the uplands infiltrates into the hyporheic zone instead of running off the surface. Lake water quality is generally good (see previous discussions), but further improvements are likely when upland runoff moves through the hyporheic zone.
Water storage	LOW-MODERATE: Again, the hyporheic zone is restricted by shoreline armoring, although the water storage function is of low importance in a managed lake. Quantitative data are not available.
Support of vegetation	LOW: Much of the shoreline zone within range of the hyporheic zone is vegetated with lawn, which is not generally supported by hyporheic water storage, but instead, by irrigation or precipitation.
Sediment storage and maintenance of base flows	LOW: The hyporheic zone is restricted by extensive shoreline armoring, which limits movement of fines from the lake into the hyporheic zone. However, neither sediment composition nor base flows are particularly important in Lake Washington.
Habitat	
Physical space and conditions for life history	LOW: Under natural conditions, the lake bottom would gradually rise in a shallow wedge such that incoming waves would roll up the bottom, losing energy. This reduced energy environment would be more hospitable to emergent vegetation, which further attenuates wave energy, providing a refuge for small fish and amphibians. Shallow nearshore areas in Lake Washington provide critical rearing, foraging and migration habitat for fish, particularly salmonids. Shoreline armoring, however, generally eliminates the low-energy shallow-water environment, creating a deeper, turbulent nearshore that is inhospitable to small fish and amphibians, as well as to emergent vegetation. Shoreline armoring can also reduce upwelling/downwelling areas, which are optimal for sockeye salmon spawning. The deeper water also allows larger fish predators to prey on the small fish. Aquatic mammals, like muskrats, seem to have adapted to the armored shoreline, and still find den sites in the looser boulder bulkheads. The absence of dense shoreline vegetation is a limiting factor in terrestrial species (birds, mammals, amphibians) use of the shoreline, since cover, food, nesting sites, travel corridors, etc. are absent.
Food production and delivery	LOW: Food production from the uplands is very limited by lack of native seed- and fruit-bearing vegetation. Not only does upland vegetation provide food directly for terrestrial wildlife, but it is a source of insects and other organic matter that drop into the water and provide food for fish and other aquatic life. The historical emergent wetland areas that are now absent also provided productive foraging areas for small mammals, wading birds and waterfowl.

APPROACH OPTION #3

The following is a conceptual overview of Option #3. It is not intended to be the final proposed regulation language, which will be drafted after further input on the concept is received.

Residential – L Shoreline Setbacks

1. Shoreline Setback Standard

Lot Depth	Required Shoreline Setback with shoreline vegetation enhancement (no reduction allowed)
Average lot depth ≤100 feet	30 feet
Average lot depth >100 and ≤150 feet	40 feet
Average lot depth >150 feet	50 - 70 feet (Note: Preference is for 50 foot setback, but staff will need to evaluate this under a cumulative impact analysis to determine whether this will comply with no net loss or whether a larger setback that is more similar to the existing median setback is needed).

2. Required Shoreline Vegetation.

a. Tree Retention. To maintain the ecological functions that trees provide to the shoreline environment, significant trees shall be retained as follows:

i. Tree removal on a property on which no development activity is proposed or in progress.

1. Submittal Requirements – When proposing to trim or remove any tree located within the shoreline setback, the property owner must submit a report to the City containing the following:

- 1) A site plan showing the approximate location of significant trees, their size (DBH) and their species, along with the location of structures, driveways, access ways and easements.
- 2) An arborist report explaining how the tree(s) fit the criteria for a nuisance or hazard tree. This requirement may be waived by the Planning Official if it is determined that the nuisance or hazard condition is obvious.
- 3) If removal of a significant tree in the shoreline setback area is approved by the Planning Official, a three-for-one replacement is required. The required minimum size of the replacement trees shall be (6) feet tall for a conifer and 2-inch caliper for deciduous or broad-leaf evergreen tree. For required replacement trees, a planting plan showing location, size and species of the new trees is required.

2. Standards - Within the shoreline setback, existing significant trees shall be retained unless the tree is determined to be a hazard or nuisance tree.

1) Hazard Tree Criteria. A hazard tree must meet the following criteria:

i. The tree must have a combination of structural defects and/or disease which makes it subject to

- a high probability of failure and is in proximity to moderate-high frequency of persons or property; and
- ii. The hazard condition of the tree cannot be lessened with reasonable and proper arboricultural practices nor can the target be removed.
- 2) Nuisance Tree Criteria. A nuisance tree must meet the following criteria:
- i. Tree is causing obvious, physical damage to private or public structures, including but not limited to: sidewalk, curb, road, driveway, parking lot, building foundation, roof;
 - ii. Tree has been damaged by past maintenance practices, that cannot be corrected with proper arboricultural practices; or
 - iii. The problems associated with the tree must be such that they cannot be corrected by any other reasonable practice. Including but not limited to the following:
 1. Pruning of the crown or roots of the tree and/or small modifications to the site including but not limited to a driveway, parking lot, patio or sidewalk to alleviate the problem.
 2. Pruning, bracing, or cabling to reconstruct a healthy crown.
- ii. Tree removal on a property on which development activity is proposed or in progress.
1. Submittal Requirements – When proposing a development activity on a lot containing trees within the shoreline setback, the following shall be required:
 - 1) A site plan showing the approximate location of significant trees, their size (DBH) and their species, along with the location of structures, driveways, access ways and easements.
 - 2) An arborist report stating the size (DBH), species, and assessment of health and determination of all trees located within the shoreline setback. This requirement may be waived by the Planning Official if it is determined that there are no trees within the shoreline setback that have the potential to be impacted by proposed development activity.
 2. Standards -
 - 1) Within the shoreline setback, existing significant trees shall be retained, provided that the trees are determined to be healthy and windfirm by a qualified professional, and provided the trees can be safely retained with proposed development activity. The Planning Official is authorized to require site plan alterations to retain significant trees in the shoreline setback. Such alterations include minor adjustments to the location of building footprints, adjustments to the location of driveways and access ways, or adjustment to the

location of walkways, easements or utilities. The applicant shall be encouraged to retain viable trees in other areas on-site.

- 2) If removal of a significant tree in the shoreline setback area is approved by the Planning Official, a three-for-one replacement is required. The required minimum size of the replacement trees shall be (6) feet tall for a conifer and 2-inch caliper for deciduous or broad-leaf evergreen tree.
 - 3) For required replacement trees, a planting plan showing location, size and species of the new trees is required. All replacement trees in the shoreline setback must be native species.
- b. Tree Pruning. Non-destructive thinning of lateral branches to enhance views is allowed, but in no circumstance shall removal of more than half of the live crown be permitted.
- c. Minimum Landscape Standard Compliance. The applicant shall plant native vegetation, as necessary, in at least 75 percent of the nearshore riparian area located along the water's edge. The nearshore riparian area shall average 10 feet in depth from the ordinary high water mark, but may be a minimum of five feet wide to allow for variation in landscape bed shape and plant placement.

Restoration of native vegetation shall consist of a mixture of trees, shrubs and groundcover and be designed to improve habitat functions. At least three (3) trees per 100 linear feet of shoreline must be included in the plan. Plant materials must be native and selected from the Kirkland Native Plant List.

- d. Landscape Plan Required. The applicant shall submit a landscape plan that depicts the quantity, location, species, and size of plant materials proposed to comply with the requirements of this section, and shall address the plant installation and maintenance requirements set forth in KZC Section 95.45. Plant materials shall be identified with both their scientific and common names. Any required irrigation system must also be shown. Preparation of a revegetation plan shall be completed by a qualified professional.
- e. Alternative Compliance. Landscaping required by this section shall be performed in compliance with the applicable standards contained in this section, unless the applicant demonstrates that alternate measures or procedures will be equal or superior to the provisions of this section in accomplishing the purpose and intent of maintaining and enhancing shoreline ecological functions and processes. Requests to use alternative measures and procedures shall be reviewed by the Planning Official and City's consulting biologist, who may approve, approve with conditions, or deny the request. The cost of producing and implementing the plan, as well as the review of the proposal by the City's consulting biologist, shall be borne by the applicant. Examples include, but are not limited to:
- i. Removal of an existing bulkhead covering at least 15 linear feet of the lake frontage which is located at, below, or within 5 feet landward of the lake's OHWM and subsequent restoration of the shoreline to a natural or semi-natural state, including creation of shallow-water beach habitat and beach/substrate composition.
 - ii. Setting back bulkheads or portions of bulkheads from the ordinary high water mark and subsequent restoration of the shoreline to a natural or

semi-natural state, including creation of shallow-water beach habitat and beach/substrate composition.

- iii. Use of low impact development techniques that demonstrate a significant reduction to stormwater runoff from the site, including but not limited to:
 - 1. Use of pervious pavement/materials for all proposed hard surfaces, including but not limited to private driveways, patio, walkways, private roads, parking areas, and sidewalk areas;
 - 2. Reduction of total impervious surface on the subject property to a minimum of 20 percentage points less than allowed under standard lot coverage provisions;
 - 3. Direction of a minimum of 90 percent of the site's runoff to on-site biofiltration swale or raingardens;
 - 4. Use of vegetated roofs for a minimum of 70 percent of the effective roof area, or
 - 5. A combination of these or similar strategies.
- iv. Placing fill material for purposes of habitat enhancement (creation or restoration of nearshore shallow-water habitat) waterward of the ordinary high water mark.
- v. Opening of previously piped on-site watercourse to allow potential rearing opportunities for anadromous fish. Opened watercourses must be provided with a native planted buffer at least five (5) feet wide on either side of the stream and a minimum 20 foot wide structure setback measured from the ordinary high water mark of the stream, and must not encumber adjacent properties without express written permission of the adjacent property owner. Opened watercourses must be designed by a qualified professional with experience in stream restoration.
- vi. Other shoreline restoration projects that are demonstrated to result in no net loss of shoreline ecological functions and processes

f. Responsibility for Regular Maintenance.

- i. The applicant, landowner, or successors in interest shall be responsible for the regular maintenance of landscaping required under this section. Plants that die must be replaced in kind.
- ii. All required landscaping shall be maintained throughout the life of the development. Prior to issuance of a certificate of occupancy, the proponent shall provide a final as-built landscape plan and a recorded agreement to maintain and replace all landscaping that is required by the City.
- iii. All required landscaping must be allowed to develop to its typical mature height and form. Pruning should be conducted only as needed to maintain health and vigor of the plant, and is expected to be only minimally required for native species.

3. Nonconformances.

a. Shoreline Setback Nonconformance Standards.

- i. Increases in structure footprint outside of the shoreline setback shall be allowed, even if all or a portion of the previously approved footprint is within the shoreline setback.
- ii. Enlargement or expansion of a detached dwelling unit located partially or wholly within the shoreline setback by the addition of gross floor area that would increase the non-conformity and/or encroach farther into the shoreline setback may be approved if all of the following criteria are met:
 - 1. The structure must be located landward of the ordinary high water mark.

2. The enlargement or expansion in the shoreline setback shall not exceed ten (10%) percent of the gross floor area of the existing dwelling unit prior to the expansion.
3. The enlargement, expansion or addition shall not extend further waterward than the existing primary residential structure, not including appurtenances permitted under Section 83.170, such as bay windows or eaves. Encroachments that extend waterward of the existing residential foundation walls require a shoreline variance.
4. The applicant must restore a portion of the shoreline setback area to offset the impact, such that the shoreline setback area will function at a higher level than the existing conditions. The restoration plan shall be prepared by a qualified professional and shall be reviewed by the Planning Official and City's consulting biologist, who may approve, approve with conditions, or deny the request. The cost of producing and implementing the plan, as well as the review of the proposal by the City's consulting biologist, shall be borne by the applicant.
Examples include, but are not limited to:
 - a. Installation of additional native vegetation within the shoreline setback that would otherwise not be required under this Chapter. At minimum, the area of shoreline setback restoration and/or enhancement shall be equivalent to the area impacted by the improvement.
 - b. Removal of an existing bulkhead covering at least 15 linear feet of the lake frontage which is located at, below, or within 5 feet landward of the lake's OHWM and subsequent restoration of the shoreline to a natural or semi-natural state, including creation or enhancement of nearshore shallow-water habitat.
 - c. Setting back bulkheads or portions of bulkheads from the ordinary high water mark and subsequent restoration of the shoreline to a natural or semi-natural state, including restoration of topography and beach/substrate composition.
 - d. Placing fill material for purposes of habitat enhancement (creation or restoration of nearshore shallow-water habitat) waterward of the ordinary high water mark.
 - e. Other shoreline restoration projects that are demonstrated to result in an improvement to existing shoreline ecological functions and processes.
5. The applicant must comply with the best management practices contained in KZC Section 83.430.3.h addressing the use of fertilizer, herbicides and pesticides as needed to protect lake water quality.
6. The applicant shall use of "fully shielded cut off" light fixtures as defined by the Illuminating Engineering Society of North America (IESNA), or other appropriate measure to conceal the light source from adjoining uses and direct the light toward the ground for any exterior light sources located on the west façade of the residence or other façades with exterior light sources that is directed towards the lake.
7. The remodel or expansion will not cause adverse impacts to shoreline ecological functions and/or processes.
- b. Nonconforming Landscaping. The landscaping requirements of this section must be brought into conformance as much as is feasible, based on available land area, in either of the following situations:
 - i. An increase of at least 10 percent in gross floor area of any structure located in shoreline jurisdiction; or
 - ii. An alteration to any structure in shoreline jurisdiction, the cost of which exceeds 50 percent of the replacement cost of the structure.

APPROACH OPTION #4

The following is a conceptual overview of Option #4. It is not intended to be the final proposed regulation language, which will be refined after further input on the concept is received.

Residential – L Shoreline Setbacks

1. Shoreline Setback Standard

Lot Type	Required Shoreline Setback with shoreline vegetation enhancement and setback reduced down to 25' with enhanced mitigation
Average lot depth ≤100 feet	30 feet
Average lot depth >100 and ≤150 feet	40 feet
Average lot depth >150 feet	50 - 70 feet (Note: Preference is for 50 foot setback, but staff will need to evaluate this under a cumulative impact analysis to determine whether this will comply with no net loss or whether a larger setback that is more similar to the existing median setback is needed).

2. Shoreline Setback Reductions

- a. The shoreline setback may be **reduced down to a minimum of twenty-five (25) feet** when setback reduction impacts are mitigated using a combination of the mitigation options provided in the table below to achieve an equal or greater protection of lake ecological functions.
 - i. At least one (1) Water Related Action must be undertaken in order to achieve the full setback reduction allowed.
 - ii. For lots >100 and ≤150 feet in depth a maximum of five (5) feet in cumulative setback reduction may be achieved under Upland Related Actions.
 - iii. For lots >150 feet in depth a maximum of fifteen (15) in cumulative setback reduction may be achieved under Upland Related Actions for the 50' setback and up to twenty-five (25) feet in cumulative back reduction may be achieved under Upland Related Actions for the 70' setback. (Note: This subsection will be revised after the Cumulative Impact Analysis is completed and the recommended setback is determined).
 - iv. All property owners who obtain approval for a reduction in the setback must comply with the best management practices contained in KZC Section 83.430.3.h addressing the use of fertilizer, herbicides and pesticides as needed to protect lake water quality.
 - v. All property owners who obtain approval for a reduction in the setback must use “fully shielded cut off” fixtures as defined by the Illuminating Engineering Society of North America (IESNA), or other appropriate measure to conceal the light source from adjoining uses and direct the light toward the ground for any exterior light sources located on the west

- façade of the residence or other façades with exterior light sources are directed towards the lake.
- vi. All property owners who obtain approval for a reduction in the setback must record the final approved setback and corresponding conditions in a form acceptable to the City Attorney, and recorded with the King County Department of Records and Elections. Land survey information shall be provided by the applicant for this purpose in a format approved by the Planning Official.
 - b. The shoreline setback may be reduced by the following:

Shoreline Setback Reduction Alternatives

Reduction Mechanism		Reduction Allowance for Lots ≤100 feet in depth	Reduction Allowance for Lots >100 and ≤150 feet in depth	Reduction Allowance for Lots >150 feet in depth
Water Related Actions				
1	Removal of an existing bulkhead covering at least 75 percent of the linear lake frontage which is located at, below, or within 5 feet landward of the lake's ordinary high water mark (OHWM) and subsequent restoration of the shoreline to a natural or semi-natural state, including restoration of topography, and beach/substrate composition;	5 feet	10 feet	20 feet
2	Removal of an existing bulkhead covering at least 15 linear feet of the lake frontage which is located at, below, or within 5 feet landward of the lake's OHWM and subsequent restoration of the shoreline to a natural or semi-natural state, including creation or enhancement of nearshore shallow-water habitat, beach/substrate composition;	5 feet, if combined with a minimum of one upland related action below	5 feet	15 feet
3	Opening of previously piped on-site watercourse to allow potential rearing opportunities for anadromous fish; Opened watercourses must be provided with a native planted buffer at least five (5) feet wide on either side of the stream, and must not encumber adjacent properties without express written permission of the adjacent property owner. Opened watercourses must be designed by a qualified professional.	N/A	5 feet	10 feet
Upland Related Actions				
4	Installation of biofiltration/infiltration mechanisms such as bioswales, created and/or enhanced wetlands, or ponds that exceed standard stormwater requirements.	N/A	5 feet	10 feet
5	Installation of a vegetated roof in accordance	N/A	5 feet	10 feet

	Reduction Mechanism	Reduction Allowance for Lots ≤100 feet in depth	Reduction Allowance for Lots >100 and ≤150 feet in depth	Reduction Allowance for Lots >150 feet in depth
	with the King County Surface Water Design Manual, Low Impact Development Technical Guidance Manual for Puget Sound or equivalent resource.			
6	Installation of pervious material for driveway, parking or private road	N/A	N/A	5 feet
7	Limiting total impervious surface on the subject property to a minimum of 10 percentage points less than allowed under standard lot coverage provisions.	N/A	N/A	5 feet
8	Preserving or restoring at least 20 percent of the total lot area outside of the reduced setback as native vegetation. No more than 20 percent of the total lot area can be lawn.	N/A	N/A	5 feet

- c. Any further setback reduction beyond that allotted in this Section shall require approval of a shoreline variance application.

2. Required Shoreline Vegetation.

- a. Tree Retention. To maintain the ecological functions that trees provide to the shoreline environment, significant trees shall be retained as follows:

- i. Tree removal on a property on which no development activity is proposed or in progress.

1. Submittal Requirements – When proposing to trim or remove any tree located within the shoreline setback, the property owner must submit a report to the City containing the following:

- 1) A site plan showing the approximate location of significant trees, their size (DBH) and their species, along with the location of structures, driveways, access ways and easements.
- 2) An arborist report explaining how the tree(s) fit the criteria for a nuisance or hazard tree. This requirement may be waived by the Planning Official if it is determined that the nuisance or hazard condition is obvious.
- 3) If removal of a significant tree in the shoreline setback area is approved by the Planning Official, a three-for-one replacement is required. The required minimum size of the replacement trees shall be (6) feet tall for a conifer and 2-inch caliper for deciduous or broad-leaf evergreen tree. For required replacement trees, a planting plan showing location, size and species of the new trees is required.

2. Standards - Within the shoreline setback, existing significant trees shall be retained unless the tree is determined to be a hazard or nuisance tree.

- 1) Hazard Tree Criteria. A hazard tree must meet the following criteria:
 - i. The tree must have a combination of structural defects and/or disease which makes it subject to a high probability of failure and is in proximity to moderate-high frequency of persons or property; and
 - ii. The hazard condition of the tree cannot be lessened with reasonable and proper arboricultural practices nor can the target be removed.
 - 2) Nuisance Tree Criteria. A nuisance tree must meet the following criteria:
 - i. Tree is causing obvious, physical damage to private or public structures, including but not limited to: sidewalk, curb, road, driveway, parking lot, building foundation, roof;
 - ii. Tree has been damaged by past maintenance practices, that cannot be corrected with proper arboricultural practices; or
 - iii. The problems associated with the tree must be such that they cannot be corrected by any other reasonable practice. Including but not limited to the following:
 1. Pruning of the crown or roots of the tree and/or small modifications to the site including but not limited to a driveway, parking lot, patio or sidewalk to alleviate the problem.
 2. Pruning, bracing, or cabling to reconstruct a healthy crown.
- ii. Tree removal on a property on which development activity is proposed or in progress.
1. Submittal Requirements – When proposing a development activity on a lot containing trees within the shoreline setback, the following shall be required:
 - 1) A site plan showing the approximate location of significant trees, their size (DBH) and their species, along with the location of structures, driveways, access ways and easements.
 - 2) An arborist report stating the size (DBH), species, and assessment of health and determination of all trees located within the shoreline setback. This requirement may be waived by the Planning Official if it is determined that there are no trees within the shoreline setback that have the potential to be impacted by proposed development activity.
 2. Standards -
 - 1) Within the shoreline setback, existing significant trees shall be retained, provided that the trees are determined to be healthy and windfirm by a qualified professional, and provided the trees can be safely retained with proposed development activity. The Planning Official is

authorized to require site plan alterations to retain significant trees in the shoreline setback. Such alterations include minor adjustments to the location of building footprints, adjustments to the location of driveways and access ways, or adjustment to the location of walkways, easements or utilities. The applicant shall be encouraged to retain viable trees in other areas on-site.

- 2) If removal of a significant tree in the shoreline setback area is approved by the Planning Official, a three-for-one replacement is required. The required minimum size of the replacement trees shall be (6) feet tall for a conifer and 2-inch caliper for deciduous or broad-leaf evergreen tree.
 - 3) For required replacement trees, a planting plan showing location, size and species of the new trees is required. All replacement trees in the shoreline setback must be native species.
- b. Tree Pruning. Non-destructive thinning of lateral branches to enhance views is allowed, but in no circumstance shall removal of more than half of the live crown be permitted.
- c. Minimum Landscape Standard Compliance. The applicant shall plant native vegetation, as necessary, in at least 75 percent of the nearshore riparian area located along the water's edge. The nearshore riparian area shall average 10 feet in depth from the ordinary high water mark, but may be a minimum of five feet wide to allow for variation in landscape bed shape and plant placement.

Restoration of native vegetation shall consist of a mixture of trees, shrubs and groundcover and be designed to improve habitat functions. At least three (3) trees per 100 linear feet of shoreline must be included in the plan. Plant materials must be native and selected from the Kirkland Native Plant List.

- d. Landscape Plan Required. The applicant shall submit a landscape plan that depicts the quantity, location, species, and size of plant materials proposed to comply with the requirements of this section, and shall address the plant installation and maintenance requirements set forth in KZC Section 95.45. Plant materials shall be identified with both their scientific and common names. Any required irrigation system must also be shown. Preparation of a revegetation plan shall be completed by a qualified professional.
- e. Alternative Compliance. Landscaping required by this section shall be performed in compliance with the applicable standards contained in this section, unless the applicant demonstrates that alternate measures or procedures will be equal or superior to the provisions of this section in accomplishing the purpose and intent of maintaining shoreline ecological functions and processes. Requests to use alternative measures and procedures shall be reviewed by the Planning Official and City's consulting biologist, who may approve, approve with conditions, or deny the request. The cost of producing and implementing the plan, as well as the review of the proposal by the City's consulting biologist, shall be borne by the applicant. Examples include but are not limited to:

- i. Removal of an existing bulkhead covering at least 15 feet of the lake frontage which is located at, below, or within 5 feet landward of the lake's OHWM and subsequent restoration of the shoreline to a natural or semi-natural state, including creation of shallow-water beach habitat and beach/substrate composition.
 - ii. Setting back bulkheads or portions of bulkheads from the ordinary high water mark and subsequent restoration of the shoreline to a natural or semi-natural state, including creation of shallow-water beach habitat and beach/substrate composition.
 - iii. Use of low impact development techniques that demonstrate a significant reduction to stormwater runoff from the site, including but not limited to:
 1. Use of pervious pavement/materials for all proposed hard surfaces, including but not limited to private driveways, patio, walkways, private roads, parking areas, and sidewalk areas;
 2. Reduction of total impervious surface on the subject property to a minimum of 20 percentage points less than allowed under standard lot coverage provisions;
 3. Direction of a minimum of 90 percent of the site's runoff to on-site biofiltration swale or raingardens;
 4. Use of vegetated roofs for a minimum of 70 percent of the effective roof area; or
 5. A combination of these or similar strategies.
 - iv. Placing fill material for purposes of habitat enhancement (creation or restoration of nearshore shallow-water habitat) waterward of the ordinary high water mark.
 - v. Opening of previously piped on-site watercourse to allow potential rearing opportunities for anadromous fish. Opened watercourses must be provided with a native planted buffer at least five (5) feet wide on either side of the stream and a minimum 20 foot wide structure setback measured from the ordinary high water mark of the stream, and must not encumber adjacent properties without express written permission of the adjacent property owner. Opened watercourses must be designed by a qualified professional with experience in stream restoration.
 - vi. Other shoreline restoration projects that are demonstrated to result in no net loss of shoreline ecological functions and processes.
- f. Responsibility for Regular Maintenance.
- i. The applicant, landowner, or successors in interest shall be responsible for the regular maintenance of landscaping required under this section. Plants that die must be replaced in kind.
 - ii. All required landscaping shall be maintained throughout the life of the development. Prior to issuance of a certificate of occupancy, the proponent shall provide a final as-built landscape plan and a recorded agreement to maintain and replace all landscaping that is required by the City .
 - iii. All required landscaping must be allowed to develop to its typical mature height and form. Pruning should be conducted only as needed to maintain health and vigor of the plant, and is expected to be only minimally required for native species.

3. Nonconformances.

a. Setback Nonconformance Standards.

- i. Increases in structure footprint outside of the shoreline setback shall be allowed, even if all or a portion of the previously approved footprint is within the shoreline setback.
- ii. Enlargement or expansion of a detached dwelling unit located partially or wholly within the shoreline setback by the addition of gross floor area that would increase the non-conformity and/or encroach farther into the shoreline setback where new structures or developments would not now be allowed may be approved if all of the following criteria are met:
- iii. Enlargement or expansion of a detached dwelling unit located partially or wholly within the shoreline setback by the addition of gross floor area that would increase the non-conformity and/or encroach farther into the shoreline setback may be approved if all of the following criteria are met:
 1. The structure must be located landward of the ordinary high water mark.
 2. The enlargement or expansion in the shoreline setback shall not exceed 10 percent of the gross floor area of the existing dwelling unit prior to the expansion.
 3. The enlargement, expansion or addition shall not extend further waterward than the existing primary residential structure, not including appurtenances permitted under Section 83.170, such as bay windows or eaves. Encroachments that extend waterward of the existing residential foundation walls require a shoreline variance.
 4. The applicant must restore a portion of the shoreline setback area to offset the impact, such that the shoreline setback area will function at a higher level than the existing conditions. The restoration plan shall be prepared by a qualified professional and shall be reviewed by the Planning Official and City's consulting biologist, who may approve, approve with conditions, or deny the request. The cost of producing and implementing the plan, as well as the review of the proposal by the City's consulting biologist, shall be borne by the applicant. Examples include, but are not limited to:
 - a. Installation of additional native vegetation within the shoreline setback that would otherwise not be required under this Chapter. At minimum, the area of shoreline setback restoration and/or enhancement shall be equivalent to the area impacted by the improvement.
 - b. Removal of an existing bulkhead covering at least 15 linear feet of the lake frontage which is located at, below, or within 5 feet landward of the lake's OHWM and subsequent restoration of the shoreline to a natural or semi-natural state, including creation or enhancement of nearshore shallow-water habitat.
 - c. Setting back bulkheads or portions of bulkheads from the ordinary high water mark and subsequent restoration of the shoreline to a natural or semi-natural state, including restoration of topography and beach/substrate composition.
 - d. Placing fill material for purposes of habitat enhancement (creation or restoration of nearshore shallow-water habitat) waterward of the ordinary high water mark.
 - e. Other shoreline restoration projects that are demonstrated to result in an improvement to existing shoreline ecological functions and processes.
 5. The applicant must comply with the best management practices

- contained in KZC Section 83.430.3.h addressing the use of fertilizer, herbicides and pesticides as needed to protect lake water quality.
6. The applicant shall use of “fully shielded cut off” light fixtures as defined by the Illuminating Engineering Society of North America (IESNA), or other appropriate measure to conceal the light source from adjoining uses and direct the light toward the ground for any exterior light sources located on the west façade of the residence or other façades with exterior light sources that is directed towards the lake.
 7. The remodel or expansion will not cause adverse impacts to shoreline ecological functions and/or processes.
- b. Nonconforming Landscaping. The landscaping requirements of this section must be brought into conformance as much as is feasible, based on available land area, in either of the following situations:
- i. An increase of at least 10 percent in gross floor area of any structure located in shoreline jurisdiction; or
 - ii. An alteration to any structure in shoreline jurisdiction, the cost of which exceeds 50 percent of the replacement cost of the structure.

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According to the County's Comprehensive Plan (Skagit County 2003), land use throughout the County consists of Public Open Space (47%), Natural Resource Areas (43%, of which 8% is agricultural land), Rural Lands (7%), Commercial/Industrial Lands (0.1%), and Urban Lands (3%).

Extensive work by the Skagit Watershed Council (Skagit Watershed Council 1998; Beamer et al. 2000) has inventoried many areas throughout both the Skagit and Samish River basins, from "pristine" to "impaired," such that habitat restoration and protection strategies can be effectively prioritized to result in appropriate levels of success. Beamer et al. (2000) found that 23 percent and 46 percent of the watersheds have been impaired with respect to hydrology and sediment, respectively. Likewise, 42 percent of riparian corridors which support anadromous fish are in need of restoration. They also identified 164 km of stream channels blocked from anadromous fish use. Overall, they identified over 400 individual restoration and protection projects within the basins, organized into five different categories (sediment reduction, riparian, isolated habitat, protection, and feasibility studies). These projects focus on addressing the *cause* rather than the *effects* of habitat degradation as emphasized by Beechie and Bolton (1999) in assessing habitat-forming processes.

Best Available Science Review: Riparian Areas

While the primary role of streams and rivers is to transport water, riparian areas provide many other fluvial and landscape processes. These processes act in concert to support a wide diversity of aquatic and terrestrial plant and wildlife species. Under natural conditions, a dynamic equilibrium within riparian areas provides for continual environmental change, such as channel migration, but supports the stability of species which rely on those changes for survival. Human impacts upon the landscape have altered this relationship through the modification of water conveyance for flood control, agriculture, and other development, such that the protection and enhancement of both habitat and species is essential to their preservation.

While lakes are hydrologically different from streams and rivers, the riparian functions that relate to lakes have many similarities to the functions provided by fluvial systems. Similar inferences can be made to the impacts which result from development along lakeshores. While site-specific in-water structures and shoreline hardening have been found to have negative impacts to both the aquatic and nearshore environment (Kahler et al. 2000), general observations of cumulative changes to watersheds and riparian zones have been noted with measurable differences in littoral habitat (Jennings et al. 2003). Much of the science discussing riparian functions focuses on fluvial rather than lentic systems. Thus, for the purposes of this best available science review, lake riparian functions are assumed to be analogous to the findings provided below.

The following review provides a background of both natural and anthropogenic-influenced processes to riparian areas. In addition, a review of the available scientific literature is provided, assessing the effectiveness of the various riparian buffer functions.

Natural Processes and Disturbance Events

Natural disturbances (e.g. floods, fire, landslides, channel migration) lead to spatial heterogeneity and temporal variability, which lead to numerous habitat niches in non-equilibrium, leading ultimately to ecological diversity (Naiman et al. 1993; Gregory et al. 1991). Unmodified riparian

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corridors are characterized by high dynamism and disturbance events, which, in low-order² streams, consist primarily of landslides and debris flows. Higher-order streams are typically characterized by floods and channel migration (Naiman et al. 1993). The survival of many plant and animal species is dependent upon such dramatic changes to the environmental landscape.

Stream channel migration is a key environmental disturbance necessary for the sustainability and richness of species along the riparian corridors. Erosional processes which occur during flood events and subsequent changes in channel direction lead to improvements in large woody debris (LWD) recruitment, gravel and sediment transport, and nutrient supply. These structural changes can result in habitat improvements, including generation of salmon spawning areas. These processes can also form off-channel habitat such as oxbows and side channels or even smaller incremental changes such as lateral bank scour and pool/riffle formations (King County 2004).

Effects of Development

A key feature of urban areas, including those developed areas within unincorporated county lands, is impervious surface coverage. Increases in impervious surface coverage, and the consequent reduction in soil infiltration, have been correlated with increased velocity, volume and frequency of surface water flows. This hydrologic shift alters sediment and pollutant delivery to streams (Booth 1998; Arnold and Gibbons 1996). Increased surface water flows associated with impervious surface coverage of suburban areas (20-30%) has been linked to decreased bank stability and increased erosion (May et al. 1997a). Knutson and Naef (1997), in their literature review, concluded that as little as 10 percent impervious surface coverage is sufficient to alter bank stability and erosion. This increased erosion often simplifies stream morphology, leading to wider, straighter stream channels (Arnold and Gibbons 1996), or narrow incised channels (Booth 1998), depending upon position in the watershed. Changes in hydrology and stream morphology brought on by impervious surfaces have also been linked to shifts in macroinvertebrate community composition, which could have profound and far-reaching impacts on the productivity of a watershed (Pederson and Perkins 1986, as cited in Leavitt 1998). Changes in fish assemblages have been correlated with changes in stream temperature and base flow as a result of increased impervious surface coverage (Wang et al. 2003). Increases in flood frequency and volume have been correlated to declining salmon populations in some Puget Sound lowland streams (Moscrip and Montgomery 1997). Riparian areas can protect against these factors by moderating surface water and sediment inputs. However, while riparian quality has been shown to be inversely proportional to the level of urbanization (May et al. 1997b), impervious surface area alone is not the only component to predicting stream biological conditions (Booth et al. 2004).

Many concerns have arisen in recent years over the impacts from the urbanization of predominantly forested areas, especially areas which contain erosion-susceptible geologic

²Stream order refers to a classification system that groups streams based upon their relative size. By convention, first-order streams have no tributaries, as viewed on a map, typically a USGS 7 ½-minute topographic map; second-order streams result from the confluence of two first-order streams; third-order streams are produced when two second-order streams meet; and so on. Recognition that many intermittent and small perennial streams are not represented on USGS 7 ½-minute topographic maps has led some to use the term "zero-order" for such streams. Reliable classification of stream order requires field verification.

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substrate and relatively high gradients (Booth and Henshaw 2001). Booth and Henshaw (2001) found that under highly susceptible conditions, post-development channel changes occur so rapidly that remediation efforts could only be successful if implemented prior to development. Booth et al. (2002) conclude that under typical rural land uses, impacts to watershed ecology from reduced forest-cover area can be as great or greater than similar increases in impervious area. Threshold levels of 10 percent impervious coverage and 35 percent deforested area have been found to mark a distinct transition towards severely degraded stream conditions (Booth 2000).

In general, development is known to have detrimental effects on salmonids, particularly with spawning abundance and success. Pess et al. (2002) found that wetland occurrence, local geology, stream gradient, and land use were significantly correlated with adult coho salmon abundance. While positive correlations were found between spawner abundance and forested areas, negative correlations were found between spawner abundance and areas converted to agriculture or urban development. An estimated 115 km of side-channel and distributary sloughs have been eliminated within the Skagit River basin, leading to a 52 percent reduction in slough rearing habitat (Beechie et al. 1994). Fish species diversity has been found to decline with increasing levels of urban development, while cutthroat trout (*O. clarki*) tend to become the dominant salmonid species (Lucchetti and Fuerstenberg 1993; Ludwa et al. 1997). In WRIA 8 (Lake Washington/Cedar/Sammamish), a local steering committee has recently recognized the need to restore coho salmon spawning habitat in order to reduce the population of cutthroat trout, a known predator of juvenile chinook salmon. Similar recommendations may be appropriate in areas throughout Skagit County.

Effects of Agriculture

Agricultural activities can have profound detrimental effects upon riparian areas, especially those activities with concentrated livestock grazing (Platts 1991; Spence et al. 1996; Armour et al. 1991). Livestock are naturally attracted to riparian areas due to available water, generally palatable vegetation, and microclimate conditions which usually represent a cooling effect during hot summer months. Cattle can spend up to 20 to 30 percent more time in riparian areas than elsewhere on their range (Platts 1990). Livestock use of riparian areas can lead to detrimental impacts to fish and wildlife habitat such as the following (excerpted from Thurston County 2005):

- Reduces or eliminates regeneration of woody vegetation.
- Changes plant species composition (e.g., xeric species and highly competitive exotic species invade, perennials are replaced by annuals, and trees/willows/sedges are replaced by brush and bare soil).
- Reduces overall riparian vegetation.
- Reduces overall plant vigor.
- Increases bank and instream deformation and erosion from loss of protective vegetation, and increases soil compaction and churning by hoof action, which lead to reduced water quality and changes in bank and channel integrity.
- Causes stream channel widening, shallowing, trenching, or braiding because of increased stream bank erosion.

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- Reduces the ability of riparian habitat to trap and filter sediments and pollutants, leading to increased sedimentation and pollution from fecal matter of livestock.
- Increases stream temperatures as a result of lost cover provided by both woody and herbaceous plants.
- Results in loss of nutrient inputs, especially invertebrate food sources, to streams.
- Lowers the water table, with subsequent loss of riparian vegetation and stream flow.
- Increases the magnitude of high and low stream flow events.
- Reduces shrub and ground-nesting habitat for songbirds and other wildlife.
- Causes declines of amphibians, small mammals, and other ground-dwelling animals that need herbaceous and woody vegetation for food and cover.
- Increases songbird nest predation and brown-headed cowbird parasitism due to loss of shielding vegetation.
- Results in loss of structural and compositional diversity of plant communities, thereby reducing overall wildlife diversity.
- Reduces forage available for wild ungulates and other herbivores.

Fencing to exclude livestock or removal of livestock in heavily impaired riparian areas is recommended to allow these areas to recover. Once the riparian vegetation and streambanks have become stable, livestock use could return to the riparian area under limited duration and intensity (Spence et al. 1996).

Cultivation of croplands can also contribute to the degradation of riparian and instream habitat. Large quantities of fine sediments can be readily transported to streams due to the loss of permanent vegetation, regular tilling of fields, and bank erosion in ditches (Spence et al. 1996). These sediments can also carry a higher quantity of fertilizers and pesticides. Consideration for use of conservation techniques such as cover crops and conservation tillage can protect exposed soil from erosion and protect riparian and stream systems (Terrell and Perfetti 1989).

Importance of Headwater Systems

There have been numerous studies of riparian and wetland buffers, and numerous reviews of those studies. Relatively few of these studies have specifically investigated the functions of buffers on intermittent or small, perennial streams. However, Benda et al. (1992) reported that in typical mountain watersheds of the Northwest, low-order streams (first- and second-order streams) account for more than 70 percent of the cumulative channel length. Similarly, intermittent streams on 13 national forests in the Northwest represented an average of approximately two-thirds of the estimated total channel length (FEMAT 1993). This can be important when assessing potential impacts to anadromous fisheries, as it is noted that populations in lower order streams can show, on a relative basis, greater declines due to environmental changes. Findings from recent modeling studies on the Skagit River and accompanying tributary systems, indicate that changes in low-flow levels show greater relative declines on lower order tributaries than on the main body of the Skagit River (Mobrand - Jones and Stokes 2005).

Functional roles of riparian areas and the width of the riparian corridors are related to the position of the stream in the drainage, the hydrologic regime, and the local geomorphology

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(Naiman et al. 1993). Low-order streams typically occupy confined channels whose forms are dominated by hillslope rather than fluvial processes (Montgomery and Buffington 1997).

Riparian plant communities influence aquatic and terrestrial ecology (Gregory et al. 1991). Steep slopes may limit the extent of common riparian vegetation (Knutson and Naef 1997). Low-order streams flowing through unconfined reaches exhibit plant communities distinct from the surrounding uplands (Gregory et al. 1991; Naiman et al. 1998). In contrast, because of the dominance of hillslope process on channel form, riparian areas along confined headwater streams tend to be narrower and less distinct, and have been thought generally to contain vegetation similar to that of upland areas (Gregory et al. 1991). However, recent investigations of confined, intermittent streams and small, perennial streams have found significant differences between riparian and upland vegetation characteristics (Waters et al. 2001). These differences in vegetation characteristics are exhibited primarily in the groundcover and shrub vegetation layers of headwater channels (Waters et al. 2001). Vegetation characteristics are critical factors in the function of the riparian zone, including allocthonous input (litterfall, terrestrial insects) (Piccolo and Wipfli 2002) and wildlife habitat (Waters et al. 2001; O'Connell et al. 2000). Finally, riparian corridors can play an important role in plant dispersal due in large part to microclimate considerations (Gregory et al. 1991).

Hydrologic connectivity is an important consideration in watershed management, and the basis for support of headwater-stream protection (Naiman et al. 1993). Headwater streams serve as important resource bases to subsidize downstream food webs, and much of the material for export originates in the riparian zone (Dodge and Mitas 2001; Piccolo and Wipfli 2002; Wipfli et al. 2002). Headwater streams also govern downstream water temperatures (Mohseni and Stefan 1999). Thus, disregard for headwater streams could have ramifications at multiple scales.

Riparian Functions

Upland changes that impact riparian areas are important in determining overall stream function, degradation and rehabilitation potential (Booth 1998). Buffers less than 10 meters in width (approximately 33 feet) are not generally considered functionally effective (review by May et al. 1997b; Johnson and Ryba 1992). The literature includes a wide range of recommended buffer widths; those with smaller widths may be adequate provided the existing buffer is high-quality forest and/or the surrounding land use has low impact (May et al. 1997b). Riparian forests tend to exhibit higher productivity than upland forests (Naiman and Décamps 1997). Buffer continuity is as important as width (May et al. 1997b). Knutson and Naef (1997) have found that there are few studies that examine the effects of incremental changes in buffer widths. While variable buffer widths may be more effective in protecting sensitive areas while also allowing flexibility (Haberstock et al. 2000; Castelle and Johnson 1998), the criteria to establish such variable widths for streams have not been developed.

Recent updates to critical area regulations within some other jurisdictions (e.g. King County, Thurston County, City of Redmond) have utilized a variable width approach based on best available science in which stream buffers may be larger/smaller depending upon connectivity to special aquatic areas such as Puget Sound or other Shorelines of the State. It is noted that fixed buffer widths are more easily established, require a lesser degree of scientific knowledge to implement, and generally require less time and money to administer (Castelle and Johnson

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1998). However, Haberstock et al. (2000) suggests utilizing conservative fixed buffer widths that are larger than the minimum needed for protection.

The best available science looks at the following functions of stream buffers: 1) water quality, 2) bank stabilization, 3) shade and temperature, 4) microclimate, 5) wildlife habitat, 6) in-stream habitat (large woody debris recruitment), and 7) productivity. Most research on these functions is narrowly focused and conducted in rural forested areas. Thus, deriving overall recommended buffer widths for application throughout a county is somewhat subjective. Table 5 notes the ranges of effective buffer widths (as outlined in each subsection) based on each function and some notes on the functions that were studied.

Water Quality

Sediment input to streams is supplied by both bank erosion and upland processes (Naiman and Décamps 1997). Sediment input to confined, low-order streams in unmodified watersheds is typically dominated by hillslope processes while sediment input within higher order streams is typically driven by fluvial processes (Montgomery and Buffington 1997). In unmodified watersheds, aquatic organisms are adapted to the natural rate of sediment input via disturbance and erosion. Changes to that natural rate of sediment input resulting from human activities stress aquatic systems (May et al. 1997b). Large storms and resulting high flows in urbanized watersheds result in elevated sediment and associated turbidity and nutrient concentrations, probably due to erosion, mass-wasting, and the mobilization of water-quality constituents accumulated on roads and other impervious surfaces. Construction sites are also potential sources for sediment (May et al. 1997b).

Table 5. Range of Effective Buffer Widths for Each Applicable Riparian Function

Function	Range of Effective Buffer Widths	Notes on Function
Water Quality (sediment and pollution removal)	80 to 150 feet	For 80% nutrient and sediment removal
Bank Stabilization (erosion control)	80 to 125 feet	Disproportionately large increases needed beyond 30 meters to improve function
Shade and Temperature	80 to 150 feet	Based on adequate shade
Microclimate	80 to 525 feet	Up to a distance of two to three site-potential tree heights (SPTH)
Wildlife Habitat	100 to 600 feet	Coverage not inclusive
In-stream Habitat (large woody debris – LWD)	33 to 200 feet	Up to 1 site potential tree height (SPTH)
Productivity	80 to 100 feet	Disproportionately large increases needed beyond 30 meters to improve function

Riparian areas have inherent water storage capabilities, which can serve to retain pollutants and nutrients in surface runoff; this is affected by soil permeability and type, surrounding land uses,

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slope, and drainage installations (Naiman and Décamps 1997). Riparian forests are important for biotic accumulation of nutrients due to high transpiration rates (Naiman and Décamps 1997), but there are variations in the effectiveness of different vegetation types in the removal of specific nutrients (Osborne and Kovacic 1993). Thus, complex buffers with multiple classes of vegetation may be most effective at removing a variety of contaminants. Indeed, Schultz et al. (1995) found that riparian buffers combining trees, shrubs, and groundcover vegetation were effective at significantly reducing a complex mix of agricultural pollutants and nutrients. Riparian buffers along smaller streams have greater potential to reduce pollutant load due to the lower water volumes in small channels, underscoring the importance of protecting such systems (Naiman and Décamps 1997).

The reduction in forest cover and increase in impervious surface coverage typical of urbanized watersheds substantially impairs the storage capabilities of the watershed (Booth 2000; Sorrano et al. 1996). Stormwater systems often bypass riparian buffers, conducting nutrient- and sediment-laden water directly to receiving waters. The result is that urban areas contribute a disproportional amount of nutrients and other contaminants to receiving waters relative to the percentage of urbanized area within the watershed (Sorrano et al. 1996). Provided that they are not bypassed via a stormwater system, forested buffers can significantly reduce nutrient flux to receiving waters, but actual reductions are highly responsive to variations in precipitation (Sorrano et al. 1996). Chemical removal functions increase with buffer width out to 25 to 30 meters (approximately 80 to 100 feet); after this point, disproportionately large increases are needed to improve riparian function (Castelle and Johnson 1998).

Forested buffers of 100 to 150 feet are frequently recommended for sediment removal functions (Johnson and Ryba 1992). However, 50 percent removal efficiency is commonly attained in the first 30 to 100 feet (Daniels and Gilliam 1996, as cited in May et al. 1997b). For sediment reduction and chemical removal, disproportionately large increases in buffer width are needed beyond 80 to 100 feet to markedly improve buffer function; most benefits of riparian vegetation are realized in the first 15 to 80 feet. Palone and Todd (1997) report that buffers of 45 feet or more are effective at reducing pesticide contamination of streams. Most studies indicate that buffer widths of 50 to 100 feet are adequate for phosphorus and sediment removal, and that increasing widths beyond 150 feet does not significantly improve removal efficiencies (Palone and Todd 1997). While vegetative filter strips have been known to be an effective best management practice for controlling non-point source pollution (Dillaha et al. 1989; Magette et al. 1989; Young et al. 1980), Palone and Todd (1997) emphasize that a combination of grass filter strips and forested buffer is especially good at removing phosphorus and sediment.

The extensive agricultural activity within Skagit County requires concentrated attention on potential impacts of varying agricultural uses. Agricultural lands tend to have some of the most disturbed areas of the landscape, often due to the removal of native vegetation and continual tillage of the soil (Spence et al. 1996). Livestock grazing, especially in riparian areas, can have profound impacts to riparian vegetation and soil conditions which can lead to water quality impairment. Platts (1991) found in 20 of 21 studies that stream and riparian habitats were degraded by livestock grazing and that habitat improved when grazing was prohibited.

To achieve improved water quality in the County's streams and rivers, riparian buffer areas should be utilized effectively to provide both biofiltration of stormwater runoff and protection

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from agricultural activities. Both of these goals can be achieved by providing dense, well-rooted vegetated buffer areas. Forested riparian areas are known to reduce nutrient input into streams (Snyder et al. 1998). Additionally, biofiltration swales, created wetlands, and infiltration opportunities for specific stormwater runoff discharges can be utilized before they reach stream channels. Stormwater runoff that is conveyed through stream buffers in pipes or ditch-like channels and discharged directly to stream channels “short circuits” or bypasses buffer areas and receives little water quality treatment via biofiltration. In areas where stormwater flows untreated through riparian buffer areas, the buffer is underutilized and is prevented from providing the intended or potential biofiltration function. Effective methods to reduce impacts from livestock grazing can include fencing, reduction of grazing intensity near riparian areas, concentrating watering/feeding activities away from riparian areas, and densely planting riparian buffers with native trees, shrubs, and groundcover species.

Bank Stabilization

Riparian vegetation is commonly acknowledged as providing a bank stabilization function. This is accomplished through a complex of tree roots, brush, and soil/rock that protect stream banks from high velocity stream flows by slowing water currents (Spence et al. 1996). These structures create resistance to erosion while allowing moderate levels of dynamic channel change to occur.

In addition to bank vegetation and root structures, large woody debris (LWD) also plays a significant role in streambank stabilization, especially in headwater streams (Naiman and Décamps 1997). Due to a lack of stream power, LWD is relatively stable in small headwater streams, contributing to overall channel stability and the retention of sediment (Montgomery and Buffington 1997), both of which are critical factors in the distribution of salmonids (Montgomery et al. 1999). Ironically, the contribution of LWD to channel form in headwater streams is essential to the reduction in stream power that ultimately impedes the export of LWD from headwater systems. Thus, maintaining sufficient recruitment of LWD to headwater streams provides an effective mechanism for maintaining channel form. However, changes in basin hydrology resulting from land use activities and stormwater conveyance can have a profound negative influence on channel stability (Booth 2000). As with sediment reduction, the streambank stabilization functions of vegetation increase with buffer width out to 25 to 30 meters; after this point, disproportionately large increases are needed to improve riparian function (Castelle and Johnson 1998).

Shade and Temperature

Factors influencing water temperature include shade, relative humidity, ambient air temperature, wind, channel dimensions, groundwater, and overhead cover (Adams and Sullivan 1989; Mohseni and Stefan 1999). The loss of riparian forest cover and stream shading has been found to significantly increase stream temperatures (Brown and Krygier 1970; Beschta et al. 1987). While shade affects stream temperature more than most other factors, it may not play a significant role in short, headwater streams (Poole and Berman 2001). Intermittent streams, for instance, typically contain no flow during the hottest weather when the potential for warming would be the greatest. Thus, the level of shading to intermittent streams is often largely irrelevant with respect to temperature. Additionally, studies of clear-cuts along forested streams in Oregon found incremental yet insignificant increases in stream temperature through short cleared reaches (Zwieniecki and Newton 1999). Ultimately, for short, headwater streams,

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groundwater temperature and the magnitude of groundwater inputs have the greatest influence on stream temperatures (Mohseni and Stefan 1999).

Overall, sixty to eighty percent shading throughout the day is recommended to maintain water temperature control (Knutson and Naef 1997). Vegetated buffers up to about 25 meters (approximately 80 feet) provide significant shade production (Castelle and Johnson 1998). Besides shading, the next most important factor influencing stream temperatures is ambient air temperature, which is a function of microclimate (Mohseni and Stefan 1999; Poole and Berman 2001; Adams and Sullivan 1989).

Microclimate

Microclimate affects many ecological processes and functions, including plant growth, decomposition, nutrient cycling, succession, productivity, migration and dispersal of flying insects, soil microbe activity, and fish habitat (synthesis provided by Brosofske et al. 1997). With the exception of wildlife habitat, riparian buffer widths necessary for microclimate control are generally much wider than those necessary for other functions. Microclimatic gradients appear in air, soil, and surface water temperatures as well as relative humidity (Naiman and Décamps 1997). Altering riparian vegetation can change microclimate, leading to alterations in riparian functions (Brosofske et al. 1997). Stream temperatures are strongly influenced by riparian soil temperatures (Naiman and Décamps 1997), ambient air temperature, relative humidity, and wind speed (Mohseni and Stefan 1999). Changes to microclimate can effectively fragment riparian areas for those species unable to cope with altered conditions (Brosofske et al. 1997). While studies on small streams (2-5 meters wide) suggest that buffers greater than 45 meters (approximately 150 feet) are appropriate to protect riparian microclimate (Brosofske et al. 1997), buffers greater than 100 meters (approximately 328 feet) are generally required for full microclimate protection (Spence et al. 1996; Brosofske et al. 1997). Microclimate factors are potentially influenced by altered conditions to a distance of two to three site-potential tree heights from the streambank (Reid and Hilton 1998). Ledwith (1996) reported that the rates of change in ambient air temperature and relative humidity in forested buffers decreased beyond 30 meters (approximately 100 feet) from the stream, indicating that the inner 30 meters of buffer were the most critical for maintaining those factors.

Wildlife Habitat

Riparian zones play a critical role as wildlife habitat, and those buffer widths reported to fully protect wildlife habitat functions are exceeded only by those widths necessary to protect microclimate (Pentec 2001a). Most studies report a range of 200 to 300 feet necessary to provide essential habitat for most species (Keller et al. 1993). However, it has been noted that even a narrow buffer will enhance the habitat of most species (Wenger 1999). Wildlife habitat value is determined by structural complexity, ecological connectivity, food and water availability, and moist and moderate microclimate (Knutson and Naef 1997). The wildlife-habitat functions of riparian buffers are intrinsically tied to the other functions discussed previously. Thus, alteration to any buffer function is likely to affect wildlife habitat. Development can fragment riparian connectivity, thereby reducing its value as habitat and travel corridor for wildlife (Armstrong et al. 1983). Based on songbird studies, while wide corridors are optimal, management efforts should focus on restoring or creating riparian areas along

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streams that lack vegetation, as even narrow buffers have been shown to enhance habitat for most species (Keller et al. 1993).

Riparian corridors can serve as refuges and travel corridors for wildlife (Naiman and Décamps 1997). The number of wildlife species present is directly proportional to buffer width (Dickson 1989, as cited in Keller et al. 1993). Riparian areas provide ready access to drinking water, nesting and foraging sites, and cover. The wildlife communities supported by large rivers can be dramatically different than those associated with small streams. Additionally, wildlife species respond to varying degrees of forest successional stages and are affected by the type, frequency, duration, and severity of disturbance (Naiman et al. 1998).

Riparian habitat along smaller streams is generally insufficient to support large mammals, but it can provide habitat for a number of bird species (Bolton and Shellberg 2001). Natal dispersal of some bird species has been linked to riparian corridors (Machtans et al. 1996). Corridors are used more frequently than clearcuts by certain bird species for movement (Machtans et al. 1996). Frogs and salamanders utilize riparian habitat at various stages of their lives; this use can be either permanent or transient (Brode and Bury 1984). Salamanders range widely from waterbodies, and utilize riparian areas as migration corridors (Maxcy and Richardson 2000; Semlitsch 1998; Brode and Bury 1984). Buffer strips that are inadequate for wildlife could impact the transfer of nutrients from aquatic to terrestrial systems (Willson et al. 1998).

In-Stream Habitat (Large Woody Debris)

As discussed above under "Shoreline Stabilization," LWD exerts a substantial influence on channel morphology for confined headwater streams. LWD and other debris are rarely transported in small streams, and the consequent obstructions formed by LWD alter hydrology and geomorphology (Knutson and Naef 1997). The collection of woody debris and the subsequent entrapment of smaller branches, limbs, leaves and other material has been found to significantly reduce flow conveyance (Dudley et al. 1998). Gregory et al. (1991) reviewed the literature and found that LWD has a greater influence in the development of geomorphic structures in headwater streams, than downstream channels. LWD also retains smaller organic debris and provides substrate for microbes and algae, supplying a resource base for macroinvertebrates (Bolton and Shellberg 2001). LWD results in longer water residence time, shortening the carbon-spiral length (Naiman and Décamps 1997).

In higher order streams, LWD plays an extremely important role in forming complex in-water habitat structures (Bilby and Ward 1991; Montgomery and Buffington 1997; Pollack and Kennard 1998). These structures improve salmonid habitat by providing flow refugia and essential cover from predators as well as improved foraging conditions. LWD also traps smaller woody debris and organic matter which in turn contributes to additional enhancement of habitat conditions. The loss of riparian forest cover has been correlated to declines in salmon populations throughout the Pacific Northwest (Bisson et al. 1987; FEMAT 1993; Naiman and Bilby 1998).

In the riparian zone, LWD facilitates establishment and survival of plants, and provides cover for wildlife (Naiman and Décamps 1997). Recruitment of LWD is largely dependent on stand-age of the riparian forest (May et al. 1997b). Recruitment from alder-dominated stands tends to be faster than coniferous forests, but decomposition rates are higher (Bilby and Ward 1991). The

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contribution of secondary tree falls (when the falling of one tree leads to the falling of another) reduces the effective width of forested buffer strips surrounded by active harvest (Reid and Hilton 1998). The implications of this study are that buffer strips need to be much greater than one site-potential tree height to maintain pre-harvest recruitment rates (Reid and Hilton 1998). Further investigation would be necessary before applying this concept to an urban environment. However, new developments requiring clearcutting of forested areas should consider the effective reduction in buffer dimensions over time due to windthrow on buffer edges.

Productivity

Small streams receive most of their energy from allochthonous input (litterfall, terrestrial insects) from the riparian zone. Ninety percent of organic matter received by small streams is exported downstream (Kiffney and Richardson *no date*). Small, headwater streams serve as food conduits for downstream, fish-bearing waters, significantly increasing the capacity of those waters to support salmon (Dodge and Mitas 2001; Piccolo and Wipfli 2002; Wipfli et al. 2002). Intermittent streams, which have been ignored in the past, have been found to produce substantial numbers of macroinvertebrates, exceeding those of perennial streams in some cases (Muchow and Richardson 2000). Recent studies around the Puget Sound region have found stream health, as measured with the multimetric benthic index of biological integrity (B-IBI), to be closely associated with urban land cover with a reduction in biological integrity as the percentage of urban cover increases (Morley and Karr 2002). Studies have shown that 30-meter (approximately 100 feet) riparian buffers maintain natural rates of input of organic matter (Kiffney and Richardson *no date*). Other studies have suggested that beyond 80 feet, disproportionately larger buffers are needed to markedly increase allochthonous inputs (Castelle and Johnson 1998).

Best Available Science Review: Marine Areas

Skagit County's western boundary abuts Puget Sound, broadly categorized as an estuary. However, the larger estuary contains numerous sub-habitat types classified based on their physical (e.g., water depth, substrate type, light level), chemical (e.g., salinity, oxygen content), and biological characteristics (e.g., plant and animal communities). These sub-habitat types include sand and mudflats, tidal marshes, beaches, bluffs, and riparian areas, among others. It is estimated that nearly one-third of all outmigrating chinook and chum salmon fry utilize salt marsh habitat rather than migrating directly into Skagit Bay (Congleton et al. 1981), emphasizing the importance of this critical habitat niche. The ecological and structural diversity in the marine environment is the result of complex and highly dynamic physical, chemical, and biological processes, none of which can be altered within a single sub-habitat type without having effects on multiple qualities of that sub-habitat type and adjacent sub-habitat types. For this dynamic system to maintain itself, remain stable (but not static), and continue to support a variety of organisms, the processes must be allowed to operate without interference. Because direct human disturbances primarily occur in or adjacent to beaches, bluffs and riparian areas (collectively the "nearshore"), the following discussion will focus on these areas.

Marine Riparian Processes and Function

According to Brennan and Culverwell (2004), "[o]f the many habitat elements comprising the nearshore, perhaps the least understood and most unappreciated, in terms of critical functions, is

Setback Provisions

1. Shoreline Setback –

- a. General – This section establishes what structures, improvements, and activities may be in or take place in the shoreline setback established for each use in each shoreline environment.
- b. Measurement of Shoreline Setback –
 - 1) The shoreline setback shall be measured landward from the ordinary high water mark on the horizontal plane and in the direction that results in the greatest dimension from the ordinary high water mark (see Plate XX).
 - 2) In those instances where the OHWM moved further upland in accordance with permits involving a shoreline habitat and natural systems enhancement project approved by the City or a state or federal agency, the shoreline setback shall be measured from the location of the ordinary high water mark that existed immediately prior to the enhancement project.
- c. Exceptions and Limitations in Some Zones – KZC Sections 83.190 through 83.250 contain specific regulations regarding what may be in or take place in the shoreline setback. Where applicable, those specific regulations supersede the provisions of this section.
- d. Structures and Improvements – The following improvements or structures may be located in the shoreline setback, provided that they are constructed and maintained in a manner that minimizes adverse impacts on shoreline functions and processes:
 - 1) Walkways, benches, and similar features, as determined by the Planning Official, which are part of the public pedestrian access required under KZC 83.370.
 - 2) Walkways within the shoreline setback that provide private access to the shoreline are permitted, subject to the following standards:
 - a) The maximum width of the walkway corridor may be no more than 25 percent of the property's lake frontage, except in no case is the corridor required to be less than 15 feet in width (see Plate XX).
 - b) The shoreline access shall be located to avoid areas of greater ecological and habitat value.
 - c) The walkway shall be constructed of a permeable walking surface, such as unit pavers, grid systems, porous concrete, or equivalent material approved by the Planning Official.
 - d) The walkway corridor may contain minor improvements such as garden sculpture, light fixtures, trellises and similar decorative structures that are associated with the walkway, provided that these improvements comply with the dimensional limitations required for the walkways and any view corridor requirements under KZC Section 83.360. Light fixtures approved under this subsection shall comply with the provisions contained in KZC 83.240.
 - 3) Those portions of water-dependent development that require improvements adjacent to the water's edge.
 - 4) Public access facilities or other similar public water-enjoyment recreational uses.
 - 5) Underground utilities accessory to a shoreline use approved by the Planning Official, provided there is no other feasible route or location.

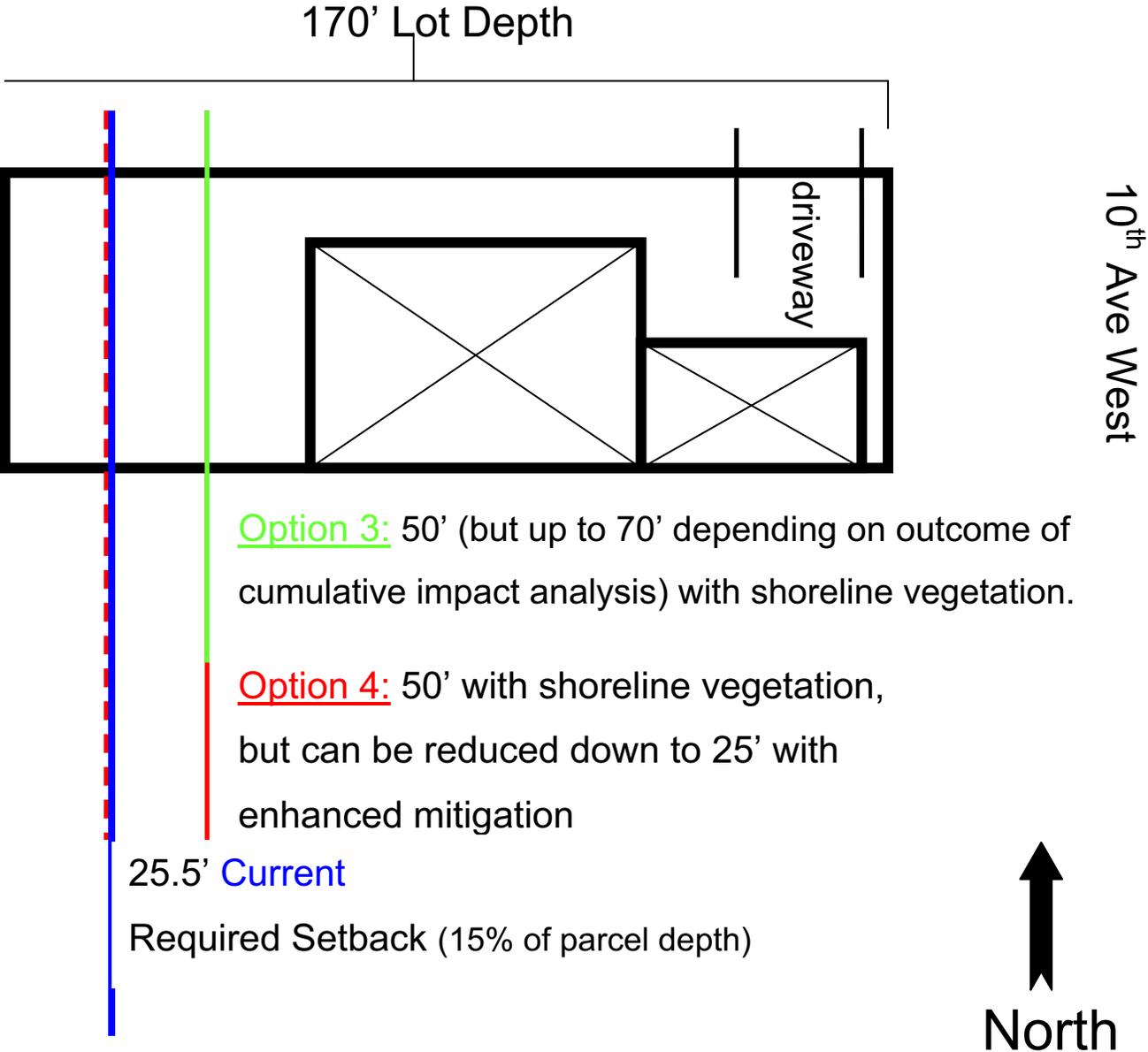
- 6) Bioretention swales, rain gardens, or other similar bioretention systems that allow for filtration of water through planted grasses or other native vegetation.
- 7) Infiltration systems, provided that installation occurs as far as feasible from the ordinary high water mark.
- 8) Bay windows, greenhouse windows, eaves, cornices, awnings, and canopies may extend up to 18 inches into the shoreline setback, subject to the limitations of this section. Eaves on bay windows may extend an additional 18 inches beyond the bay window. Chimneys that are designed to cantilever or otherwise overhang are permitted. The total horizontal dimension of the elements that extend into the shoreline setback, excluding eaves and cornices, may not exceed 25 percent of the length of the facade of the structure.
- 9) Decks, patios and similar improvements may extend up to 5 feet into the shoreline setback, subject to the following standards:
 - a) The feature shall be constructed of a permeable surface, such as wood with gaps between boards and a pervious surface below, unit pavers, grid systems, porous concrete, or equivalent material approved by the Planning Official.
 - b) The total horizontal dimension of the elements that extend into the shoreline setback may not exceed 25 percent of the length of the facade of the structure.
 - c) The improvement may not extend more than 18 inches above finished grade.
- 10) In the Urban Mixed shoreline environment, balconies at least 15 feet above finished grade may extend up to 4 feet into the shoreline setback.
- 11) Bridges and other essential public facilities that must cross shorelines.
- 12) Parking as authorized by the Planning Official under the provisions of KZC 83.400.3.
- 13) Shoreline stabilization measures approved under the provisions of KZC 83.280.

Existing Single Family Setback in Market St. Neighborhood

(Residential –L Designation)

Lot Depth Group of > 150' (median setback – 74.9)

74.9 Existing Setback

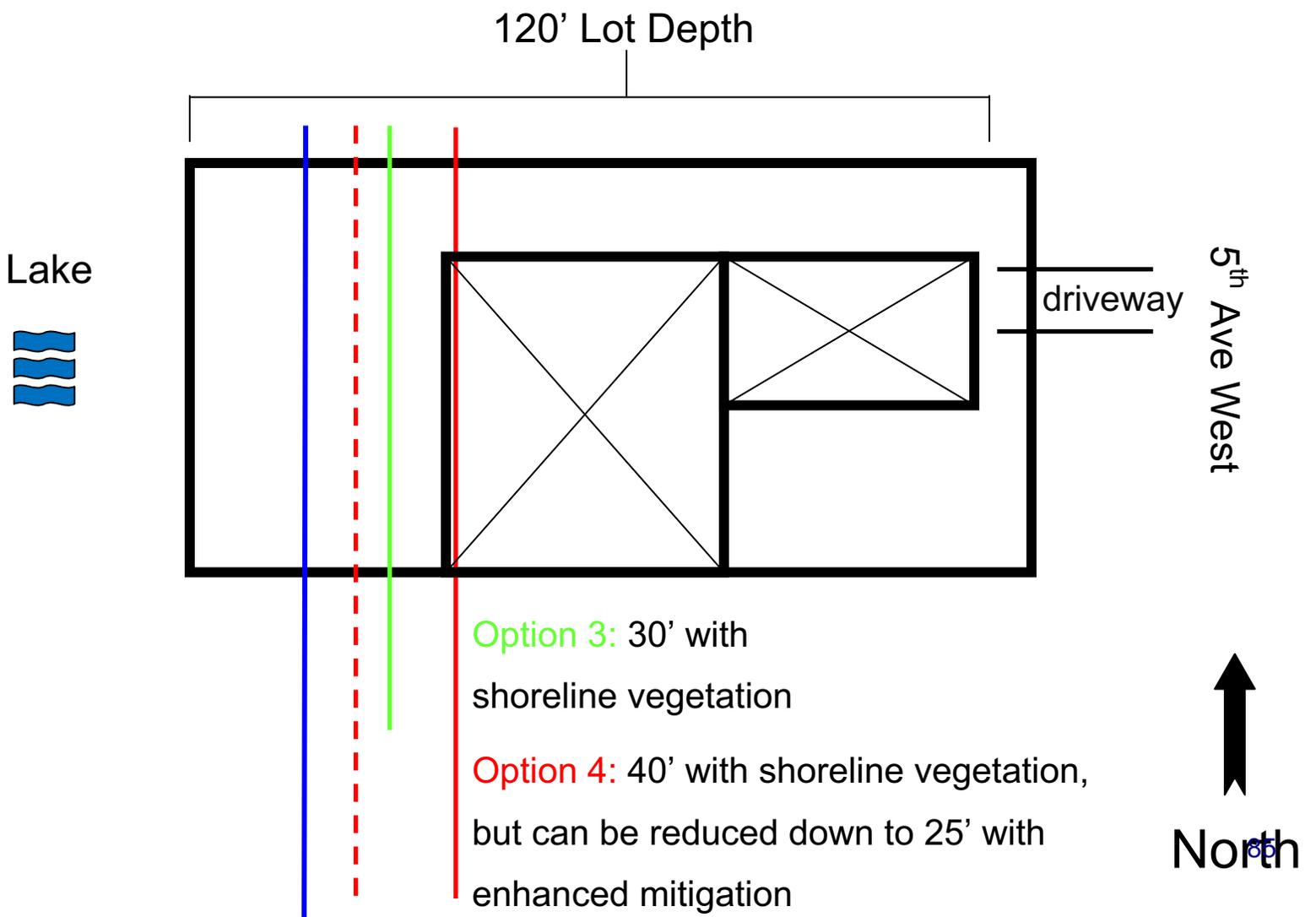


Existing Single Family Setback in Market St. Neighborhood

(Residential –L Designation)

Lot Depth Group of 100' – 150' (median setback –39.8')

38.25 Existing Setback

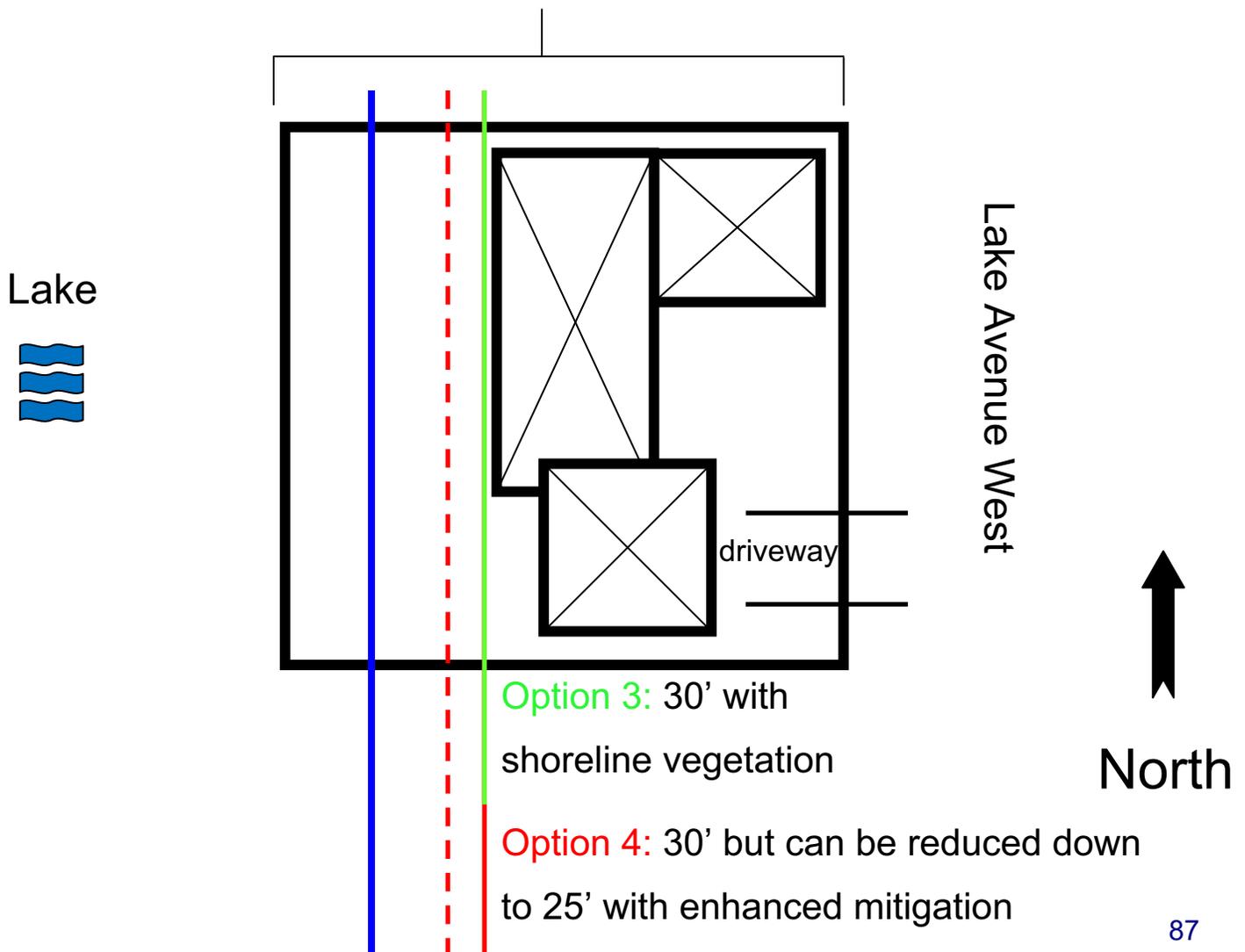


Existing Single Family Setback in Market St. Neighborhood (Residential –L Designation)

Lot Depth Group of < 100' (medium setback – 31.1')

31.24' Existing Setback

89' Lot Depth



83.340 Shoreline Setbacks

[Placeholder]

83.350 Shoreline Vegetation Management

[Placeholder]

83.360 View Corridors

1. General - Development within the shoreline area located west of Lake Washington Boulevard and Lake Street South shall include public view corridors which provides the public an unobstructed view of the water.
2. Standards -
 - a. For properties lying waterward of Lake Washington Boulevard and Lake Street South, a minimum view corridor of thirty percent of the average parcel width must be maintained. The intent of the corridor is to provide an unobstructed view from the adjacent public right-of-way to the waters of Lake Washington and the shoreline on the opposite side of the Lake and beyond. A view of the shoreline edge of the subject property should be provided if existing topography, vegetation, and other factors allow for this view to be retained.
 - b. Properties located in the UM Shoreline Environment where view corridors have been previously established under an approved Master Plan or zoning permit approved under the provisions of Chapter 152 KZC shall comply with the view corridor requirements as approved. Modifications to the proposed view corridor shall be considered under the standards established in the Master Plan or approved zoning permit.
3. Exceptions - The requirement for a view corridor does not apply to the following:
 - a. The following water-dependent uses:
 - 1) Marina, but only piers, docks, and floats and temporary storage of boats undergoing service or repair
 - 2) Piers, docks, floats, boatlifts and canopies
 - 3) Tour Boat Facility, ferry terminal or water taxi, but not including permanent structures greater than 200 square feet in size housing commercial uses ancillary to the facility
 - 4) Moorage buoy
 - 5) Public Access Pier or Boardwalk
 - 6) Boat launch
 - b. Public Parks
 - c. Properties located in the UM Shoreline Environment within the Central Business District
4. View corridor location - The location of the view corridor shall be designed to meet the following location standards, and must be approved by the Planning Official.
 - a. If the subject property does not directly abut the shoreline, the view corridor shall be designed to coincide with the view corridor of the property to the west.
 - b. The view corridor must be adjacent to either the north or south property line of the subject property, whichever will result in the widest view corridor, considering the following, in order of priority:
 - 1) Location of existing view corridors.

- 2) Existing development or potential development on adjacent properties, given the topography, access and likely location of future improvements.
 - 3) The availability of actual views of the water and the potential of the lot for providing those views from the street.
 - 4) Location of existing sight-obscuring structures, parking areas or landscaping that are likely to remain in place in the foreseeable future.
 - c. The view corridor must be in one continuous piece.
 - d. For land divisions, the view corridor shall be established as part of the land division and shall be located to create the largest view corridor on the subject property.
5. Permitted encroachments -
- a. The following shall be permitted within a view corridor:
 - 1) Areas provided for public access, such as public pedestrian walkways, public use areas, or viewing platforms.
 - 2) Parking lots and subsurface parking structures, provided that the parking does not obstruct the view from the public right-of-way to the waters of Lake Washington and the shoreline on the opposite side of the Lake and beyond Lake Washington.
 - 3) Structures may be located in view corridors if the slope of the subject property permits full, unobstructed views of the waters of Lake Washington and the shoreline on the opposite side of the Lake over the structures from the public right-of-way.
 - 4) Shoreline restoration plantings and existing specimen trees and native shoreline vegetation.
 - 5) Landscaping, provided it is designed not to obscure the view from the public right-of-way to the waters of Lake Washington and the shoreline on the opposite side of the Lake and beyond Lake Washington at the time of planting or upon future growth. The Planning Official shall determine appropriate landscaping in the event of a conflict between required site screening and view preservation.
 - 6) Open fencing that is designed not to obscure the view from the public right-of-way to the waters of Lake Washington and the shoreline on the opposite side of the Lake and beyond Lake Washington.
 - b. The following shall not be permitted within a view corridor:
 - 1) Structures, except as noted in subsection 5.a above.
 - 2) Sight ~~obscuring~~obscuring fences.
 - 3) Landscaping that would screen the view of the shoreline at the time of planting or upon future growth.
6. Dedication - The applicant shall grant an easement or similar legal agreement, in a form acceptable to the City Attorney, and recorded with the King County Department of Records and Elections to protect the view corridor. Land survey information shall be provided by the applicant for this purpose in a format approved by the Planning Official.

83.370 Public Access

1. General – Promoting a waterfront pedestrian corridor is an important goal within the City. Providing pedestrian access along Lake Washington enables the public to view and enjoy the

scenic beauty, natural resources, and recreational activities that are found along the shoreline. This pedestrian corridor provides opportunities for physical recreation and leisure and serves as a movement corridor. Connections between the waterfront walkway and the public right-of-way serve to link the walkway with the larger pedestrian network.

The applicant shall comply with the following pedestrian access requirements with new development for all uses and land divisions under KMC Chapter 22, pursuant to the standards of this section:

- a. Pedestrian Access Along the Water's Edge – Provide public pedestrian walkways along the water's edge.
- b. Pedestrian Access From Water's Edge to Right-of-Way – Provide public pedestrian walkways designed to connect the waterfront pedestrian corridor to the abutting right-of-way.
2. Public Pedestrian Walkway Location – The applicant shall locate public pedestrian walkways pursuant to the following standards:
 - a. The walkways shall be designed and sited to minimize the amount of native vegetation removal, impact to existing significant trees, soil disturbance, and disruption to existing habitat corridor structures and functions.
 - b. The walkways shall be located along the water's edge between the development and the shoreline at an average of 10 feet but no closer than 5 feet landward of the ordinary high water mark so that the walkway may meander and not be a straight line.
 - c. The public nature of the access shall be maximized by locating the walkways adjacent to other public areas including street-ends, waterways, parks, other public access and connecting trails.
 - d. The walkways shall maximize views of the water and sun exposure.
 - e. The walkways shall be located along pedestrian-oriented facades, as defined in KZC Chapter 92, where applicable and if feasible.
 - f. The walkways shall be situated so as to minimize significant grade changes and the need for stairways.
 - g. The walkways shall minimize intrusions of privacy for occupants and residents of the site by avoiding locations directly adjacent to residential windows and outdoor private open spaces, or by screening or other separation techniques.
 - h. The walkways shall be located so as to avoid undue interference with the use of the site by water-dependent businesses.
 - i. The Planning Official shall determine the appropriate location of the walkway on the subject property when planning for the connection of a future waterfront walkway on an adjoining property.
3. Development Standards Required for Pedestrian Improvements - The applicant shall install pedestrian walkways pursuant to the following standards:
 - a. The walkways shall be at least six feet wide, and contain a permeable paved walking surface, such as unit pavers, grid systems, porous concrete, or equivalent material approved by the Planning Official.
 - b. The walkways shall be distinguishable from traffic lanes by pavement material, texture, or change in elevation.
 - c. The walkways shall not be included with other impervious surfaces for lot coverage calculations.

- d. Permanent barriers which limit future extension of pedestrian access between the subject property and adjacent properties are not permitted.
 - e. Regulated public access shall be indicated by signs installed at the entrance of the public pedestrian walkway on the abutting right-of-way and along the public pedestrian pathway. The signs shall be located for maximum public visibility. Design, materials and location of the signage shall meet City specifications.
 - f. All public pedestrian walkways shall be provided through a minimum 6-foot wide easement or similar legal agreement, in a form acceptable to the City Attorney, and recorded with the King County Department of Records and Elections. Land survey information shall be provided by the applicant for this purpose in a format approved by the Planning Official.
4. Operation and Maintenance Requirements for Pedestrian Improvements – The following operation and maintenance requirements apply to all public pedestrian walkways required under this section:
- a. Hours of operation and limitations on accessibility – All required pedestrian walkways shall be open to the public between the hours of 10 am to 8 pm, from March 21st to September 21st. Otherwise the pedestrian walkway shall be open between the hours of 10 am to 5 pm.
 - b. The applicant is permitted to secure the subject property outside of the hours of operation noted in subsection 4.a above by a security gate, subject to the following provisions:
 - 1) The gate shall remain in an open position during hours of permitted public access; and
 - 2) Signage shall be included noting the hours of permitted public access.
 - c. The Planning Official is authorized to approve a temporary closure when hazardous conditions are present that would affect public safety.
 - d. Performance and maintenance.
 - 1) No certificate of occupancy or final inspection shall be issued until all required public access improvements are completed, except under special circumstances approved by the Planning Official and after submittal of an approved performance security.
 - 2) The owner, its successor or assigns, shall be responsible for the completion and maintenance of all required waterfront public access areas and signage on the subject property.
5. Exceptions and Modifications
- a. General – The provisions of this subsection establish under what circumstances the requirements of this section do not apply or may be modified.
 - b. Exception
 - 1) The requirement for the dedication and improvement of public access does not apply to:
 - a) Development located within the Residential - L shoreline environment, except as follows:
 - i) Public entities, such as a government facility or public park, located within the Residential - L shoreline environment are required to provide public access pursuant to the provisions of this section.
 - b) Development located within the Natural shoreline environment.
 - c) Individual single-family residences and normal appurtenances associated with a single-family residence that is not part of a land division. For development involving land division, public pedestrian access is required.
 - c. Modifications

- 1) The Planning Official may require or grant a modification to the nature or extent of any required improvement for any of the following reasons:
 - a) If the presence of critical areas such as wetlands, streams, or geologically hazardous areas preclude the construction of the improvements as required.
 - b) To avoid interference with the operations of water-dependant uses, such as marinas.
 - c) If the property contains unique characteristics, such as size, configuration, topography, or location.
 - e)d) If the access would create unavoidable health or safety hazards to the public.
- 2) If a modification is granted, the Planning Official may require that an alternate method of providing public access, such as a public use area or viewing platform, be provided.
- 3) Access from the right-of-way to the waterfront walkway may be waived by the Planning Official if the following applies:
 - a) If public access along the waterfront of the subject property can be reached from an adjoining property, and
 - b) If the adjoining property providing access to the waterfront contains an existing public access walkway connecting with the public right-of-way and the maximum separation between public access entry points along the public right-of-way is 300 feet; and
 - c) If the subject property does not contain a public use area required as a condition of development by the Planning Official under the provisions of this Chapter.

83.380 Standards for In-Water Activity

1. Standards – The following standards shall apply to in-water work, including, but not limited to, installation of new structures, repair of existing structures, restoration projects, and aquatic vegetation removal:
 - a. In-water structures and activities shall be sited and designed to avoid the need for future shoreline stabilization activities and dredging, giving due consideration to watershed functions and processes, with special emphasis on protecting and restoring priority habitat and species.
 - b. In-water structures and activities are not subject to the shoreline setbacks established in KZC 83.180.
 - c. Projects involving in-water work must obtain all applicable state and federal permits, including those from the U.S. Army Corps of Engineers, Washington Department of Ecology, and Washington Department of Fish and Wildlife.
 - d. Projects involving in-water work shall comply with timing restrictions as set forth by state and federal project approvals.
 - e. Removal of existing structures shall be accomplished so the structure and associated material does not re-enter the lake.
 - f. Waste material such as construction debris, silt, excess dirt or overburden resulting from in-water structure installaion shall be deposited above the ordinary high water mark in an approved upland disposal site.
 - g. Extreme care shall be taken to ensure that no petroleum products, hydraulic fluid, fresh cement, sediments, sediment-laden water, chemicals, or any other toxic or deleterious materials are allowed to enter or leach into the lake during in-water activities. Appropriate spill

- clean-up materials must be on-site at all times, and any spills must be contained and cleaned immediately after discovery.
- h. In-water work shall be conducted in a manner that causes little or no siltation to adjacent areas. A sediment control curtain shall be deployed in those instances where siltation is expected. The curtain shall be maintained in a functional manner that contains suspended sediments during project installation.
 - i. Any trenches, depressions, or holes created below the ordinary high water mark shall be backfilled prior to inundation by high water or wave action.
 - j. Fresh concrete or concrete by-products shall not be allowed to enter the lake at any time during in-water installation. All forms used for concrete shall be completely sealed to prevent the possibility of fresh concrete from entering the lake.
 - k. Alteration or disturbance of the bank and bank vegetation shall be limited to that necessary to perform the in-water work. All disturbed areas shall be protected from erosion using vegetation or other means.
 - l. All trash and unauthorized fill, including concrete blocks or pieces, bricks, asphalt, metal, treated wood, glass, and paper, below the ordinary high water mark shall be removed and deposited above the ordinary high water mark in an approved upland disposal location.
 - m. If at any time, as a result of in-water work, fish are observed to be in distress or killed, or water quality problems develop, immediate notification shall be made to the Washington Department of Ecology.

83.390 Miscellaneous Standards

1. Screening of Storage and Service Areas

- a. Outdoor Use, Activity and Storage. Outdoor Use, Activity and Storage areas must comply with the following:
 - 1) Comply with the shoreline setback established for the use with which they are associated.
 - 2) Be located to minimize visibility from any street, Lake Washington, required public pedestrian walkway, public use area or public park.
 - 3) Be screened from view from the street, adjacent properties, Lake Washington, required public pedestrian walkways, and other public use areas by a solid screening enclosure or within a building.
 - 4) Outdoor dining areas and temporary storage for boats undergoing service or repair that are accessory to a marina are exempt from the placement and screening requirements of subsection (2) and (3) above.
- b. Mechanical and similar equipment or appurtenances.
 - 1) At-grade mechanical and similar equipment or appurtenances are not permitted within the shoreline setback.
 - 2) Rooftop appurtenances and at or below grade appurtenances shall be screened with landscaping or a solid screening enclosure or located in such a manner as to not be visible from Lake Washington, required public pedestrian walkways, or public use areas.
- c. Garbage and trash receptacles. Garbage and recycling receptacles must comply with the following:

- 1) Comply with the shoreline setback established for the use with which they are associated.
 - 2) Be located to minimize visibility from any street, Lake Washington, required public pedestrian walkway, public use area or public parks.
 - 3) Be screened from view from Lake Washington, required public pedestrian walkways, and other public use areas by a solid screening enclosure, such as a wooden fence without gaps, or within a building.
 - 4) Exemptions – Garbage receptacles for detached dwelling units, duplexes, moorage facilities, parks, and construction sites, but not including dumpsters or other containers larger than a typical individual trash receptable, are exempt from the placement and screening requirements of this section.
2. Design Standards -
- a. Water-enjoyment and non-water oriented commercial and recreational uses shall contain the following design features to provide for the ability to enjoy the physical and aesthetic qualities of the shoreline:
 - 1) Buildings are designed with windows that orient toward the shoreline.
 - 2) Buildings are designed to incorporate outdoor areas such as decks, patios, or viewing platforms that orient toward the shoreline.
 - 3) Buildings are designed with entrances along the waterfront façade and with connections between the building and required public pedestrian walkways.
 - 4) Service areas are located away from the shoreline.
 - 5) Site planning includes public use areas along waterfront public pedestrian walkways, if required under the provisions established in KZC 83.370, which will encourage pedestrian activity, including but not limited to:
 - i) Permanent seating areas;
 - ii) Landscaping, including trees to provide shade cover; and
 - iii) Trash receptacles.
 - 6) Exemptions – The following are exempt from the requirements of subsection 2.a:
 - a) Non-water oriented commercial and recreational uses which are located on the east side of Lake Washington Blvd. NE/Lake Street or on the east side of 98th Avenue NE.
 - b) Non-water oriented commercial and recreational uses where there is an intervening development between the shoreline and the subject property are exempt from the requirements of subsection (3) and (5) above.
 - b. Buildings located along the shoreline shall not incorporate materials which are reflective or mirrored.

83.400 Parking

1. General -
 - a. Only parking associated with a permitted or conditional shoreline use shall be allowed, except that within the UM Shoreline Environment, surface or structured parking facilities may accommodate parking for surrounding uses and for-pay parking is allowed.
 - b. Parking as a primary use on a subject property is prohibited.

2. Number of Parking Spaces -

- a. All uses must provide sufficient off-street parking spaces. The required number of parking stalls established in KZC Chapter 105, KZC 50.60 and in the applicable use zone charts shall be met.

3. Parking Location -

- a. Intent – To reduce the negative impacts of parking and circulation facilities on visible public spaces within the shoreline, such as shoreline public pedestrian walkways, public use areas, and view corridors along public rights-of-way.
- b. Standards - The applicant shall locate parking areas on the subject property according to the following requirements:
 - 1) Parking is prohibited in the shoreline setback established in KZC 83.180, except as follows:
 - a) Subsurface parking is allowed, provided that:
 - i) The structure is designed to avoid the need for future shoreline stabilization as documented in a geotechnical report, prepared by a qualified geotechnical engineer or engineering geologist.
 - ii) The structure is designed to comply with shoreline vegetation standards established in KZC 83.350. As part of any proposal to install subsurface parking within the shoreline setback, the applicant shall submit site-specific documentation prepared by a qualified expert to establish that the design will adequately support the long-term viability of the required landscaping.
 - iii) The structure is designed to minimize impacts to public access and views to Lake Washington from the public right-of-way.
 - iv) Public access over subsurface parking structures shall be designed to minimize significant changes in grade.
 - b) The parking is designed as a short-term loading area to support a water-dependent use.
 - 2) Parking is prohibited on structures located over water.
 - 3) Parking, loading, and service areas for a permitted use activity shall not extend closer to the shoreline than a permitted structure unless:
 - a) The parking is incorporated within a structure, subject to the following standards:
 - i) The parking is subsurface, or
 - ii) The design of any above-grade structured parking incorporates landscaping and/or building surface treatment to provide an appearance comparable to the rest of the building not used for parking.
 - b) The parking is accessory to a Public Park.
 - c) The parking is designed as a short-term loading area to support a water-dependent use.

4. Design of Parking Areas -

- a. General
 - 1) Parking areas shall be designed to contain pedestrian connections to public pedestrian walkways and building entrances. Pedestrian connections shall either be a raised sidewalk, or, minimally, composed of a different material from the parking lot.

- 2) Pedestrian connections must be at least five feet wide, excluding vehicular overhang.
- b. Design of Surface Parking Lots – In addition to the perimeter buffering and internal parking lot landscaping provisions established in KZC Chapter 95, the applicant shall buffer all parking areas and driveways that are visible from required public pedestrian pathways or public use areas with appropriate landscaping screening that is consistent with the landscaping and buffering standards for driving and parking areas contained in KZC Chapter 95.-
- c. Design of Structured Parking Facilities - Each facade of a garage or a building containing above-grade structured parking that is visible from a required view corridor, or is facing a public pedestrian walkway, public use area, or public park must incorporate landscaping and/or building surface treatment to mitigate the visual impacts of the structured parking.

83.410 Signage

1. Standards – The following standards shall apply to signs within the shoreline jurisdiction:
 - a. Signage shall not interfere or block designated view corridors within the shoreline jurisdiction.
 - b. Signage shall not be permitted to be constructed over water, except as follows:
 - 1) For retail establishments providing gas and oil sales for boats, where the facility is accessible from the water, provided that:
 - a) Internally-illuminated signs are not permitted. Low-wattage external light sources that are not directed towards neighboring properties or Lake Washington are permitted, subject to approval by the Planning Official.
 - b) One sign, not exceeding 20 square feet per sign face, is permitted. The sign area for the water-oriented sign shall be counted towards the maximum sign area permitted in KZC Chapter 100.
 - c) The sign shall be affixed to a pier or wall-mounted. The maximum permitted height of a freestanding sign is five feet above the surface of the pier. A wall-mounted sign shall not project above the roofline of the building to which they are attached.
 - 2) Boat traffic signs, directional signs and signs displaying a public service message installed by a governmental agency.
 - 3) Interpretative signs in coordination with public access and recreation amenities.
 - 4) Building addresses mounted flush to the end of a pier, with letters and numbers at least 4 inches high.
 - c. Signs shall comply with the shoreline setback standards contained in KZC 83.180.

83.420 Lighting

1. General - Exterior lighting shall be controlled using limits on height, light levels of fixtures, lights shields, time restrictions and other mechanisms in order to:
 - a. Prevent glare-light pollution or other adverse effects that could infringe upon public enjoyment of the shoreline;
 - b. Protect residential uses from adverse impacts that can be associated with light trespass from higher-intensity uses; and
 - c. Prevent adverse effects on fish and wildlife species and their habitats.
2. Exceptions –

- a. The following development activities are exempt from the submission and lighting standards established in this section:
 - 1)a. Development of a detached dwelling unit or associated appurtenances, except piers, docks, floats, boatlifts and canopies;
 - 2)b. Emergency lighting required for public safety;
 - 3)c. Lighting for public rights-of-way;
 - 4)d. Outdoor lighting for temporary or periodic events (e.g. community events at public parks);
 - 5)e. Seasonal decoration lighting; and
 - 6)f. Sign lighting, which is governed by KZC 83.410.
 - b. The following development activities are exempt from the submission standards established in ~~this section (3) below~~, but are still subject to the lighting standards contained in (4) below:
 - 1)a. Piers, docks, floats, boatlifts and canopies;
 - 2)b. Public Access Pier or Boardwalk; and
 - 3)c. Moorage buoy.
3. Submission Requirements - All development proposed within the shoreline jurisdiction shall submit a lighting plan and photometric site plan for approval by the Planning Official. The plan shall contain the following:
- a. A brief written narrative, with accompanying plan or sketch, which demonstrates the objectives of the lighting.
 - b. The location, fixture type, mounting height, and wattage of all outdoor lighting and building security lighting, including exterior lighting mounted on piers or illuminating piers.
 - c. A detailed description of the fixtures, lamps, supports, reflectors, and other devices. The description shall include manufacturer's catalog specifications and drawings, including sections when requested.
 - d. If building elevations are proposed for illumination, drawings shall be provided for all relevant building elevations showing the fixtures, the portions of the elevations to be illuminated, and the illuminance levels of the elevations.
 - e. Photometric data, such as that furnished by manufacturers, showing the angle of light emissions.
 - f. Computer generated photometric grid showing footcandle readings every 20 feet within the property or site, and 15 feet beyond the property lines, including Lake Washington, if applicable. Iso-footcandle contour line style plans are also acceptable.
4. Standards –
- a. Direction and Shielding –
 - 1)a. All exterior building-mounted and ground-mounted light fixtures shall be directed downward and use “fully shielded cut off” fixtures as defined by the Illuminating Engineering Society of North America (IESNA), or other appropriate measure to conceal the light source from adjoining uses and direct the light toward the ground.
 - 2)b. Exterior lighting mounted on piers or illuminating piers and water-dependent uses located at the shoreline edge shall be at ground or dock level, and be directed away from adjacent properties and the water.

3. Standards -

- a. Shoreline development shall, at minimum, comply with the standards established in the City's adopted surface water design manual in effect at the time of permit application.
- b. Shoreline uses and activities shall utilize Best Management Practices (BMPs) to minimize any increase in surface runoff and to control, treat and release surface water runoff so that receiving properties, wetlands or streams, and Lake Washington are not adversely affected. All types of BMPs require regular maintenance to continue to function as intended.
- c. Low Impact Development (LID) techniques shall be considered and implemented to the greatest extent practicable. LID is a set of techniques that mimic natural watershed hydrology by slowing, evaporating/transpiring, and filtering water that allows water to soak into the ground closer to its source. The development shall meet one or more of the following objectives:
 - 1) Preservation of natural hydrology.
 - 2) Reduction of impervious surfaces.
 - 3) Treatment of stormwater in numerous small, decentralized structures.
 - 4) Use of natural topography for drainageways and storage areas.
 - 5) Preservation of portions of the site in undisturbed, natural conditions.
 - 6) Reduction of the use of piped systems. Whenever possible, site design should use multifunctional open drainage systems such as vegetated swales or filter strips which also help to fulfill landscaping and open space requirements.
 - 7) Use of environmentally sensitive site design and green building construction that reduces runoff from structures, such as green roofs.
 - 8) Other low impact development techniques as approved by the Public Works Official.
- d. New outfalls or discharge pipes to Lake Washington shall be avoided, where possible. If a new outfall or discharge pipe is demonstrated to be necessary, it shall be designed so that the outfall and energy dissipation pad is installed above the ordinary high water mark.
- e. In addition to providing storm water quality treatment facilities as required in this section and the City's Surface Water Master Plan, the developer and/or property owner shall provide source control BMPs such as structures and/or a manual of practices designed to treat or prevent storm water pollution arising from specific activities expected to occur on the site. Examples of such specific activities include, but are not limited to, carwashing at multifamily residential sites and oil storage at marinas providing service and repair. Criteria for development and submittal of designs and plans for such BMPs are included in the standard plans.
- f. No release of oils, hydraulic fluids, fuels, paints, solvents or other hazardous materials shall be permitted into Lake Washington. If water quality problems occur, including equipment leaks or spills, work operations shall cease immediately and the City of Kirkland's Public Works Storm/Surface Water Division and other agencies with jurisdiction shall be contacted immediately to coordinate spill containment and cleanup plans. It shall be the responsibility of property owner to fund and implement the approved spill containment and cleanup plans and to complete the work by the deadline established in the plans.
- g. All materials that come into contact with water shall be constructed of untreated wood, cured concrete, steel or other approved non-toxic materials. Materials used for over-water decking or other structural components that may come into contact with water shall comply with regulations of responsible agencies (i.e. Washington State Department of Fish and Wildlife or Department of Ecology) to avoid discharge of pollutants.

h. The application of pesticides, herbicides, or fertilizers shall comply with the following standards:

1) The application of pesticides, herbicides or fertilizers within shoreline setbacks shall utilize Best Management Practices (BMPs) to prevent contamination of surface and ground water and/or soils, and adverse effects on shoreline ecological functions and values. Examples of BMPs include, but are not limited to:

a) Appropriate application timing in relation to existing soil moisture, anticipated weather conditions and irrigation schedules to achieve the greatest product performance and reduce potential for off-site transport.

b) Application of post-emergence herbicides when weeds are at their most vulnerable growth stage.

c) Use of the lowest appropriate rate to minimize pesticide loss to the environment

d) Application by spot treatment or wicking, particularly for broad spectrum herbicides.

e) Use of time-release fertilizers and herbicides.

f) Use of less toxic products, such as soaps, horticultural oils and plant-based insecticides and organic fertilizers.

2) Pesticides, herbicides, or fertilizers shall be applied in a manner that minimizes their transmittal to adjacent water bodies. The direct runoff of chemical-laden waters into adjacent water bodies is prohibited. Aerial spraying of herbicides, pesticides and fertilizers within 200 feet of the ordinary high water mark of Lake Washington is prohibited.

~~1) Within the shoreline setback, application of pesticides, herbicides, or fertilizers shall be prohibited, unless specifically authorized in an approved mitigation plan or otherwise authorized in writing by the Planning Official.—~~

~~2) Pesticides, herbicides, or fertilizers used outside of the shoreline setback shall be applied in a manner as to prevent their transmittal into Lake Washington. The direct runoff of chemical laden waters into Lake Washington is prohibited.~~

3) The use of pesticides, herbicides or fertilizers within the shoreline jurisdiction, including applications of herbicides to control noxious aquatic vegetation, shall comply with regulations of responsible agencies, including the Washington State Department of Agriculture, Department of Ecology, Department of Fish and Wildlife or the Federal Environmental Protection Agency.

4) A copy of the applicant's National Pollutant Discharge Elimination System (NPDES) permit, issued from Washington State Department of Ecology, authorizing aquatic pesticide (including herbicides) to Lake Washington must be submitted to the Kirkland Planning Department prior to the application.

83.440 Critical Areas – General Standards

1. The provisions of this Chapter do not extend the shoreline jurisdiction beyond the limits specified in this SMP. For regulations addressing critical area buffers that are outside of the shoreline jurisdiction, see KZC Chapter 85 and 90.
2. Avoiding impacts to critical areas.
 - a. An applicant for a land surface modification or development activity within a critical area or its associated buffer shall utilize the following mitigation sequencing guidelines, which appear in order of preference, during design of the proposed project:

- 1) Avoiding the impact or hazard by not taking a certain action, or redesigning the proposal to eliminate the impact. The applicant shall consider reasonable, affirmative steps and make best efforts to avoid critical area impacts. If impacts cannot be avoided through redesign, or because of site conditions or project requirements, the applicant shall then proceed with the sequence of steps in subsection (2)(a)(2) through (7) of this section.
- 2) Minimizing the impact or hazard by limiting the degree or magnitude of the action or impact with appropriate technology or by changing the timing of the action.
- 3) Restoring the impacted critical areas by repairing, rehabilitating or restoring the affected critical area or its buffer.
- 4) Minimizing or eliminating the hazard by restoring or stabilizing the hazard area through plantings, engineering or other methods.
- 5) Reducing or eliminating the impact or hazard over time by preservation or maintenance operations during the life of the development proposal, activity or alteration.
- 6) Compensating for the adverse impact by enhancing critical areas and their buffers or creating substitute critical areas and their buffers as required in the KZC.
- 7) Monitoring the impact, hazard or success of required mitigation and taking remedial action based upon findings over time.

In the required critical areas study, the applicant shall include a discussion of how the proposed project utilized mitigation sequencing to avoid, minimize, and mitigate impacts to critical areas and associated buffers. The applicant should seek to avoid, minimize and mitigate overall impacts based on the functions and values of all of the relevant critical areas.

- b. In addition to the above steps, the specific development standards, permitted alteration requirements, and mitigation requirements of this chapter and elsewhere in the KZC apply.
- c. In determining the extent to which the proposal should be further redesigned to avoid and minimize the impact, the City may consider the purpose, effectiveness, engineering feasibility, commercial availability of technology, best management practices, safety and cost of the proposal and identified modifications to the proposal. The City may also consider the extent to which the avoidance of one type or location of a critical area could require or lead to impacts to other types or locations of nearby or adjacent critical areas. The City shall document the decision-making process used under this section as a part of the critical areas review conducted pursuant to KZC XXX.

3. Trees in Critical Areas or Critical Area Buffers

- a. General - The intent of preserving vegetation in and near streams and wetlands and in geologically hazardous areas is to support the functions of healthy sensitive areas and sensitive area buffers and/or avoid disturbance of geologically hazardous areas.
- b. Submittal Requirements – When proposing to trim or remove any tree located within critical areas or critical area buffers, the property owner must submit a report to the City containing the following:
 - 1) A site plan showing the approximate location of significant trees, their size (DBH) and their species, along with the location of structures, driveways, access ways and easements.
 - 2) An arborist report explaining how the tree(s) fit the criteria for a nuisance or hazard tree. This requirement may be waived by the Planning Official if it is determined that the nuisance or hazard condition is obvious.
 - 3) A proposal detailing how the trees will be made into a snag or wildlife tree, including access and equipment, snag height, and placement of woody debris.

- 4) For required replacement trees, a planting plan showing location, size and species of the new trees.
- c. Tree Removal Standards
- 1) If a tree is considered a nuisance or hazard in a critical area or its buffer, the priority action is to create a “snag” or wildlife tree with the subject tree. If creation of a snag is not feasible, then the felled tree shall be left in place unless the Planning Official permits its removal in writing.
 - a) Hazard Tree Criteria. A hazard tree must meet the following criteria:
 - i) The tree must have a combination of structural defects and/or disease which makes it subject to a high probability of failure and is in proximity to moderate-high frequency of persons or property; and
 - ii) The hazard condition of the tree cannot be lessened with reasonable and proper arboricultural practices nor can the target be removed.
 - b) Nuisance Tree Criteria. A nuisance tree must meet the following criteria:
 - i) Tree is causing obvious, physical damage to private or public structures, including but not limited to: sidewalk, curb, road, driveway, parking lot, building foundation, roof;
 - ii) Tree has been damaged by past maintenance practices, that cannot be corrected with proper arboricultural practices; or
 - iii) The problems associated with the tree must be such that they cannot be corrected by any other reasonable practice. Including but not limited to the following:
 1. Pruning of the crown or roots of the tree and/or small modifications to the site including but not limited to a driveway, parking lot, patio or sidewalk to alleviate the problem.
 2. Pruning, bracing, or cabling to reconstruct a healthy crown.
 - 2) The removal of any tree will require the planting of a native tree of a minimum of six feet in height in close proximity to where the removed tree was located. Selection of native species and timing of installation shall be coordinated with the Planning Official.
4. Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers.
- a. Plants intended to mitigate for the loss of natural resource values are subject to the following requirements.
 - 1) Plant Source. Plant materials must be native and selected from the Kirkland Plant List. Seed source must be as local as possible, and plants must be nursery propagated unless transplanted from on-site areas approved for disturbance. These requirements must be included in the Mitigation Plan specifications.
 - 2) Installation. Plant materials must be supported only when necessary due to extreme winds at the planting site. Where support is necessary, stakes, guy wires, or other measures must be removed as soon as the plant can support itself, usually after the first growing season. All fertilizer applications to turf or trees and shrubs shall follow Washington State University, National Arborist Association or other accepted agronomic or horticultural standards.
 - 3) Fertilizer Applications. Fertilizers shall be applied in such a manner as to prevent its entry into waterways and wetlands and minimize its entry into storm drains. No applications shall be made within 50 feet of a waterway or wetland, or a required buffer, whichever is

greater, unless specifically authorized in an approved mitigation plan or otherwise authorized in writing by the Planning Official.

Note: Much of the provisions of 83.450 and 83.460 below are taken from the City's existing critical area ordinance of Chapter 90. ~~The subsections with highlighting reflect new provisions of significant revisions to the text from Chapter 90 after it was copied into the new shoreline section. Staff recommends that the Planning Commission focus on the new subsections and on the overall application of Chapter 90 to the shoreline critical areas. The key changes, as outlined in the staff report, reflect necessary revisions to be consistent with the final version of the Department of Ecology's Western Washington Wetland Rating System as well as Ecology's synthesis of scientific literature on wetlands and issuance of guidance for management of wetlands (Wetlands in Washington State). Both of these documents meet the criteria for Best Available Science (BAS) as defined in WAC 365-195-905, which cities and counties are required to meet when amending their zoning regulations to protect critical areas.~~

83.450 Wetlands

1. Applicability – The following provisions shall apply to wetlands and wetland buffers located within the shoreline jurisdiction, in replace of provisions contained in Chapter 90 KZC. Provisions contained in Chapter 90 KZC that are not addressed in this section continue to apply, with the exception of the following subsections, which shall not apply within the shoreline jurisdiction:
 - a. KZC 90.20 – General Exceptions
 - b. KZC 90.30 – Definitions
 - c. KZC 90.75 – Minor Lakes
 - d. KZC 90.140 – Reasonable Use Exception
 - e. KZC 90.160 – Appeals
 - f. KZC 90.170 – Planning/Public Works Official Decisions – Lapse of Approval
2. Wetland Determinations, Delineations, Regulations, Criteria, and Procedures - All determinations and delineations of wetlands shall be made using the criteria and procedures contained in the Washington State Wetlands Identification and Delineation Manual (Washington Department of Ecology, 1997). All determinations, delineations, and regulations of wetlands shall be based on the entire extent of the wetland, irrespective of property lines, ownership patterns, or other factors.
3. Wetland Determinations - Either prior to or during review of a development application, the Planning Official shall determine whether a wetland or its buffer is present on the subject property using the following provisions:
 - a. During or immediately following a site inspection, the Planning Official shall make an initial assessment as to whether any portion of the subject property or surrounding area (which shall be the area within 250 feet of the subject property) meets the definition of a wetland. If this initial site inspection does not indicate the presence of a wetland on the subject property or surrounding area, no additional wetland studies will be required. However, if the initial site inspection or information subsequently obtained indicates the presence of a wetland on the subject property or surrounding area, then the applicant shall follow the procedure in subsection (2) of this section.
 - b. If the initial site inspection or information subsequently obtained indicates that a wetland may exist on or near the subject property or surrounding area, the applicant shall either (a) fund a study and report prepared by the City's wetland consultant; or (b) submit a report prepared by a qualified professional approved by the City, and fund a review of this report by the City's wetland consultant.

- c. If a wetlands study and report are required, at a minimum the report shall include the following:
- 1) A summary of the methodology used to conduct the study;
 - 2) A professional survey which is based on the KCAS or plat-bearing system and tied to a known monument, depicting the wetland boundary on a map of the surrounding area which shows the wetland and its buffer;
 - 3) A description of the wetland habitat(s) found throughout the entire wetland (not just on the subject property) using the U.S. Fish & Wildlife Service classification system (Classification of Wetlands and Deepwater Habitats in the U.S., Cowardin et al., 1979);
 - 4) A description of nesting, denning, and breeding areas found in the wetland or its surrounding area;
 - 5) A description of the surrounding area, including any drainage systems entering and leaving the wetland, and a list of observed or documented plant and wildlife species;
 - 6) A description of historical, hydrologic, vegetative, topographic, and soil modifications, if any;
 - 7) A proposed classification of the wetland as Category I, II, III, or IV wetland; and
 - 8) A completed rating form using the *Washington State Wetland Rating System for Western Washington – Revised* (Washington State Department of Ecology Publication # 04-06-025, or latest version). [Note: When a wetland buffer outside of shoreline jurisdiction is proposed to be modified, the wetland in shoreline jurisdiction must be rated using the methodology required by KZC 90.40 to determine the appropriate buffer width. Ecology's rating system and the corresponding buffers only apply to those wetlands and buffers which are located in shoreline jurisdiction.]

a-d. Formal determination of whether a wetland exists on the subject property, as well as its boundaries and rating, shall be made by the Planning Official after preparation and review of the report, if applicable, by the City's wetland consultant. The Planning Official's decision under this section shall be used for review of any development activity proposed on the subject property for which an application is received within two (2) years of the decision; provided, that the Planning Official may modify any decision whenever physical circumstances have markedly and demonstrably changed on the subject property or the surrounding area as a result of natural processes or human activity.

4. Wetland Buffers and Setbacks

- a. No land surface modification shall occur and no improvement may be located in a wetland or its buffer, except as provided in KZC 83.450.4 through 83.460.10. See also KZC 83.440, Trees in Critical Areas or Critical Area Buffers; and KZC 83.440, Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers. Required, or standard, buffers for wetlands are as follows, and are measured from the outer edge of the wetland boundary:

Wetland Buffers

WETLAND CATEGORY AND CHARACTERISTICS	BUFFER
Category I	
Natural Heritage Wetlands	215 feet
Bog	215 feet
Habitat score ¹ from 29 to 36 points	225 feet
Habitat score from 20 to 28 points	150 feet
Other Category I wetlands	125 feet
Category II	
Habitat score from 29 to 36 points	200 feet

Habitat score from 20 to 28 points	125 feet
Other Category II wetlands	100 feet
Category III	
Habitat score from 20 to 28 points	125 feet
Other Category III wetlands	75 feet
Category IV	
	50 feet

¹Habitat score is one of three elements of the rating form.

Note: Buffer widths were developed by King County for its urban growth areas using the best available science information presented in Chapter 9: Wetlands of Best Available Science – Volume 1: A Review of Scientific Literature
<http://www.metrokc.gov/ddes/cao/PDFs04ExecProp/BAS-Chap9-04.pdf>.

Where a legally established, improved road right-of-way or structure divides a wetland buffer, the Planning Official may approve a modification of the required buffer in that portion of the buffer isolated from the wetland by the road or structure, provided the isolated portion of the buffer:

~~8~~1) Does not provide additional protection of the wetland from the proposed development; and

~~9~~2) Provides insignificant biological, geological or hydrological buffer functions relating to the portion of the buffer adjacent to the wetland.

b. b. Buffer Setback – Structures shall be set back at least 10 feet from the designated or modified wetland buffer. The City may allow within this setback minor improvements which would clearly have no adverse effect during their construction, installation, use, or maintenance, on fish, wildlife, or their habitat or any vegetation in the buffer or adjacent wetland.

c. c. Storm Water Outfalls – Necessary surface discharges of storm water through wetland buffers and buffer setbacks may be allowed on the surface, but piped system discharges are prohibited unless approved pursuant to this section. Storm water outfalls (piped systems) may be located within the buffer setback specified in subsection (b) of this section and within the buffers specified in subsection (a) of this section only when the City determines, based on a report prepared by a qualified professional under contract to the City and paid for by the applicant, that surface discharge of storm water through the buffer would clearly pose a threat to slope stability, and if the storm water outfall will not:

~~6~~1) Adversely affect water quality;

~~7~~2) Adversely affect fish, wildlife, or their habitat;

~~8~~3) Adversely affect drainage or storm water detention capabilities;

~~9~~4) Lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and

~~10~~5) Be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas.

Storm water facilities shall minimize potential impacts to the wetland or wetland buffer by meeting the following design standards:

~~11~~6) Catch basins must be installed as far as feasible from the buffer boundary.

~~12~~7) Outfalls must be designed to reduce the chance of adverse impacts as a result of concentrated discharges from pipe systems. This may include:

~~1~~a) Installation of the discharge end as far as feasible from the sensitive area; and

2)b) Use of appropriate energy dissipation at the discharge end.

d. d. Water Quality Facilities – Detention and water quality treatment devices, and other similar facilities as determined by the City, shall not be located within the wetland buffers or buffer setbacks of this section except as provided below. Water quality facilities, as determined by the City, may be located within the wetland buffers of subsection 85.450.4 of this section. The City may only approve a proposal to install a water quality facility within the outer one-half (1/2) of a wetland buffer if a suitable location outside of the buffer is not available and only if:

- 1) It will not adversely affect water quality;
- 2) It will not adversely affect fish, wildlife, or their habitat;
- 3) It will not adversely affect drainage or storm water detention capabilities;
- 4) It will not lead to unstable earth conditions or create erosion hazards or contribute to scouring actions;
- 5) It will not be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas;
- 6) The existing buffer is already degraded as determined by a qualified professional;
- 7) Its installation would be followed immediately by enhancement of an area equal in size and immediately adjacent to the affected portion of the buffer; and
- 8) Once installed, it would not require any further disturbance or intrusion into the buffer.

The City may only approve a proposal by a public agency to install a water quality facility elsewhere in a wetland buffer if criteria 9 – 12 (below) are met in addition to 1 – 8 (above):

- 9) The project includes enhancement of the entire buffer;
- 10) The project would provide an exceptional ecological benefit off-site;
- 11) The water quality facility, once installed, would not require any further disturbance or intrusion into the buffer; and
- 12) There is no practicable or feasible alternative proposal that results in less impact to the buffer.

e.b. Utilities and Rights-of-Way – Provided that activities will not increase the impervious area or reduce flood storage capacity, the following work may only be allowed in critical areas and their buffers subject to City review after appropriate mitigation sequencing per KZC 83.440.2 has been considered and implemented:

- 1) All utility work in improved City rights-of-way;
- 2) All normal and routine maintenance, operation and reconstruction of existing roads, streets, and associated rights-of-way and structures; and
- 3) Construction of sewer or water lines that connect to existing lines in a sensitive area or buffer where no feasible alternative location exists based on an analysis of technology and system efficiency.
- 4) All affected critical areas and buffers will be expeditiously restored to their pre-project condition or better. For purposes of this subsection only, “improved City rights-of-way” include those rights-of-way that have improvements only underground, as well as those with surface improvements.

f. Minor Improvements – Minor improvements may be located within the sensitive area buffers specified in subsection (a) of this section. These minor improvements shall be located within the outer one-half of the sensitive area buffer, except where approved stream crossings are made. The City may only approve a proposal to construct a minor improvement within an environmentally sensitive area buffer if:

83.3741) It will not adversely affect water quality;

83.3722) It will not adversely affect fish, wildlife, or their habitat;

83.3733) It will not adversely affect drainage or storm water detention capabilities;

83.3744) It will not lead to unstable earth conditions or create erosion hazards or contribute to scouring actions;

83.3755) It will not be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas; and

83.3766) It supports public or private shoreline access.

The City may require the applicant to submit a report prepared by a qualified professional which describes how the proposal will or will not comply with the criteria for approving a minor improvement.

5. Wetland Buffer Fence or Barrier - Prior to beginning development activities, the applicant shall install a six (6) foot high construction-phase chain link fence or equivalent fence, as approved by the Planning Official and consistent with City standards, along the upland boundary of the entire wetland buffer with silt screen fabric. The construction-phase fence shall remain upright in the approved location for the duration of development activities.

Upon project completion, the applicant shall install between the upland boundary of all wetland buffers and the developed portion of the site, either (1) a permanent three ~~-(3)-~~ to four (4)-foot-tall split rail fence; or (2) equivalent barrier, as approved by the Planning Official. Installation of the permanent fence or equivalent barrier must be done by hand where necessary to prevent machinery from entering the wetland or its buffer.

6. Permit Process -

a. The City shall consolidate and integrate the review and processing of the critical areas aspects of the proposal with the shoreline permit required for the proposed development activity, except as noted in subsection b ~~and e~~.

~~b.~~ All Wetland Modification or Wetland Buffer Modification affecting > 25% of the standard buffer not otherwise permitted under Section 9 below require a Shoreline Variance pursuant to Process IIA, described in Chapter 141, except as follows:

~~i.~~ Development activity or land surface modification approved under subsection 4 above (Wetland Buffers and Setbacks) or subsection 10 (Wetland Restoration) below, and

~~e.~~ except for development activity or land surface modification approved under subsection 4 above (Wetland Buffers and Setbacks) or subsection 10 (Wetland Restoration) below, require a Shoreline Variance pursuant to Process IIA, described in Chapter 141.

2) Applicants for a detached dwelling who are unable to comply with the specific standards of this section may seek approval pursuant to the following standards and procedures:

- i. When allowed - A reasonable use exception may be granted if the strict application of this section would preclude all reasonable use of a site. The reasonable use process within the shoreline management area applies to lots that are significantly constrained by critical area and critical area buffers, but still contain a minimum of 20 percent of the land area of the subject property outside of wetlands, either in wetland buffer or as upland area.
- ii. Submittal Requirements – As part of the reasonable use request, in addition to submitting an application, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City’s qualified professional. The report shall include the following:
 - a) A determination and delineation of the sensitive area and sensitive area buffer containing all the information specified in KZC 83.450(3) for a wetland or based on the definitions contained in this chapter for a stream;
 - b) An analysis of whether any other reasonable use with less impact on the sensitive area and sensitive area buffer is possible;
 - c) Sensitive site design and construction staging of the proposal so that the development will have the least practicable impact on the sensitive area and sensitive area buffer;
 - d) A description of the area of the site which is within the sensitive area or within the setbacks or buffers required by this chapter;
 - e) A description of protective measures that will be undertaken such as siltation curtains, hay bales and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities;
 - f) An analysis of the impact that the amount of development proposed would have on the sensitive area and the sensitive area buffer;
 - g) How the proposal minimizes to the greatest extent possible net loss of sensitive area and/or sensitive area buffer functions;
 - h) Whether the improvement is located away from the sensitive area and the sensitive area buffer to the greatest extent possible;
 - i) Information specified in KZC 83.450(8); and
 - j) Such other information or studies as the Planning Official may reasonably require.
- iii. Decisional Criteria – The City shall grant approvals for reasonable use exceptions only if all of the following criteria are met:
 - a) That no permitted type of land use for the property with less impact on the sensitive area and associated buffer is feasible and reasonable, which in the Natural Environment shall be one single-family dwelling;
 - b) That there is no feasible on-site alternative to the proposed activities, including reduction in size, density or intensity, phasing of project implementation, change in timing of activities, revision of road and lot layout, and/or related site planning considerations, that would allow a reasonable economic use with less adverse impacts to the sensitive area and buffer;
 - c) Unless the applicant can demonstrate unique circumstances related to the subject property, the amount of site area that will be disturbed by structure placement or other land alteration, including but not limited to grading, utility

installation, decks, driveways, paving, and landscaping, shall not exceed 3,000 square feet. The amount of allowable disturbance shall be that which will have the least practicable impact on the sensitive area and the sensitive area buffer given the characteristics and context of the subject property, sensitive area, and buffer;

- d) The applicant shall pay for a qualified professional to help with the City's determination of the appropriate limit for disturbance;
- e) The proposal is compatible in design, scale and use with other legally established development in the immediate vicinity of the subject property in the same zone and with similar site constraints;
- f) The proposal utilizes to the maximum extent possible innovative construction, design, and development techniques, including pervious surfaces, which minimize to the greatest extent possible net loss of sensitive area functions and values;
- g) The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the property;
- h) The proposal meets the mitigation, maintenance, and monitoring requirements of this chapter;
- i) The inability to derive reasonable use is not the result of actions by the applicant after the effective date of the ordinance codified in this chapter or its predecessor; and
- j) The granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances.

iv. Modifications and Conditions – The City may approve reduction in required yards or buffer setbacks and may allow the maximum height of structures to be increased up to five feet to reduce the impact on the sensitive area and sensitive area buffer. The required front yard may be reduced by up to 50 percent where the applicant demonstrates that the development cannot meet the City's code requirements without encroaching into the sensitive area buffer. The City shall include in the written decision any conditions and restrictions that the City determines are necessary to eliminate or minimize any undesirable effects of approving the exception.

~~In the Natural Environment, applicants for a detached dwelling who are unable to comply with the specific standards of this section may seek approval pursuant to the following standards and procedures:~~

~~—Process—If the strict application of this section would preclude all reasonable use of a site, an owner of real property may apply for a reasonable use exception to this chapter.~~

~~The application shall be considered under Process IIA of Chapter 150 KZC; provided, that for a single family development proposal which does not exceed a total of 3,000 square feet of site disturbance, and does not encroach into the sensitive area, but only the associated buffer, the application shall be considered pursuant to subsection (7) of this section, Reasonable Use Process: Administrative Alternative.~~

~~In addition, the application shall be processed as a Shoreline Conditional Use Permit under the provisions of Chapter 141 KZC and WAC 173-27.~~

- ~~—Submittal Requirements—As part of the reasonable use request, in addition to submitting an application, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's qualified professional. The report shall include the following:~~
- ~~—A determination and delineation of the sensitive area and sensitive area buffer containing all the information specified in KZC 83.450(3) for a wetland or based on the definitions contained in this chapter for a stream;~~
 - ~~—An analysis of whether any other reasonable use with less impact on the sensitive area and sensitive area buffer is possible;~~
 - ~~—Sensitive site design and construction staging of the proposal so that the development will have the least practicable impact on the sensitive area and sensitive area buffer;~~
 - ~~—A description of the area of the site which is within the sensitive area or within the setbacks or buffers required by this chapter;~~
 - ~~—A description of protective measures that will be undertaken such as siltation curtains, hay bales and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities;~~
 - ~~—An analysis of the impact that the amount of development proposed would have on the sensitive area and the sensitive area buffer;~~
 - ~~—How the proposal minimizes to the greatest extent possible net loss of sensitive area functions;~~
 - ~~—Whether the improvement is located away from the sensitive area and the sensitive area buffer to the greatest extent possible; and~~
 - ~~—Such other information or studies as the Planning Official may reasonably require.~~
- ~~—Decisional Criteria—The City shall grant applications for reasonable use exceptions only if all of the following criteria are met:~~
- ~~—That no permitted type of land use for the property with less impact on the sensitive area and associated buffer is feasible and reasonable, which in a residential zone shall be one single family dwelling and in a commercial or industrial zone shall be an office use;~~
 - ~~—That there is no feasible on-site alternative to the proposed activities, including reduction in size, density or intensity, phasing of project implementation, change in timing of activities, revision of road and lot layout, and/or related site planning considerations, that would allow a reasonable economic use with less adverse impacts to the sensitive area and buffer;~~

~~Unless the applicant can demonstrate unique circumstances related to the subject property, the amount of site area that will be disturbed by structure placement or other land alteration, including but not limited to grading, utility installation, decks, driveways, paving, and landscaping, shall not exceed the following limits:~~

~~—If the subject property contains 6,000 square feet of area or less, no more than 50 percent of the site may be disturbed.~~

~~—If the subject property contains more than 6,000 square feet but less than 30,000 square feet, no more than 3,000 square feet may be disturbed.~~

~~—For properties containing 30,000 square feet or more, the maximum allowable site disturbance shall be between 3,000 square feet and 10 percent of the lot area, to be determined by the City on a case-by-case basis.~~

~~—The amount of allowable disturbance shall be that which will have the least practicable impact on the sensitive area and the sensitive area buffer given the characteristics and context of the subject property, sensitive area, and buffer.~~

~~—The applicant shall pay for a qualified professional to help with the City's determination of the appropriate limit for disturbance;~~

~~The proposal is compatible in design, scale and use with other legally established development in the immediate vicinity of the subject property in the same zone and with similar site constraints;~~

~~The proposal utilizes to the maximum extent possible innovative construction, design, and development techniques, including pervious surfaces, which minimize to the greatest extent possible net loss of sensitive area functions and values;~~

~~The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the property;~~

~~The proposal meets the mitigation, maintenance, and monitoring requirements of this chapter;~~

~~The inability to derive reasonable use is not the result of actions by the applicant after the effective date of the ordinance codified in this chapter or its predecessor; and~~

~~The granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances.~~

1) ~~Modifications and Conditions —The City may approve reduction in required yards or buffer setbacks and may allow the maximum height of structures to be increased up to five feet to reduce the impact on~~

~~the sensitive area and sensitive area buffer. The City shall include in the written decision any conditions and restrictions that the City determines are necessary to eliminate or minimize any undesirable effects of approving the exception.~~

~~—Process: Administrative Alternative— If, in order to provide reasonable use of a site, the standards of this chapter need to be modified and the proposed improvement does not exceed a total of 3,000 square feet of site impact, including but not limited to structures, paved areas, landscaping, decks, driveways, utility installation, and grading, the Planning Director is authorized to approve a reasonable use exception subject to subsections (4) and (5) of this section and considered under Process I of Chapter 145 KZC. Administrative approval shall also be subject to the following limitations:~~

~~—The required front yard may be reduced by up to 50 percent where the applicant demonstrates that the development cannot meet the City's code requirements without encroaching into the sensitive area buffer.~~

~~—The encroachment of the proposed development shall only be into the sensitive area buffer, not the sensitive area.~~

~~1)~~

7. Modification of Wetlands –

a. No land surface modification shall occur and no improvement shall be located in a wetland, except as provided in this subsection. Furthermore, all modifications of a wetland shall be consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory Recommendations Report* (Adolfson Associates, Inc., 1998).

b. Submittal Requirements - The applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's qualified professional. The report shall include the following:

- 1) A determination and delineation of the sensitive area and sensitive area buffer containing all the information specified in KZC 83.450(3) for a wetland or based on the definitions contained in this chapter for a stream;
- 2) An analysis of the mitigation sequencing as outlined in KZC 83.440.2;
- 3) Sensitive site design and construction staging of the proposal so that the development will have the least practicable impact on the sensitive area and sensitive area buffer;
- 4) A description of the area of the site which is within the sensitive area or within the setbacks or buffers required by this chapter;
- 5) A description of protective measures that will be undertaken such as siltation curtains, hay bales and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities;
- 6) An analysis of the impact that the amount of development proposed would have on the sensitive area and the sensitive area buffer;

- 7) How the proposal minimizes to the greatest extent possible net loss of sensitive area and/or sensitive area buffer functions;
- 8) Whether the improvement is located away from the sensitive area and the sensitive area buffer to the greatest extent possible;
- 9) An assessment of the habitat, water quality, storm water detention, ground water recharge, shoreline protection, and erosion protection functions of the wetland and its buffer. The report shall also assess the effects of the proposed modification on those functions.
- 10) Information specified in KZC 83.450(8);
- 11) An evaluation of the project's consistency with the shoreline variance criteria contained in WAC 173-27-170; and
- 12) Such other information or studies as the Planning Official may reasonably require.

c. Decisional Criteria - The City may only approve an improvement or land surface modification in a wetland only if:~~As part of the modification request, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's wetland consultant. The report shall contain all information specified in KZC 83.450(c) as well as an assessment of the habitat, water quality, storm water detention, ground water recharge, shoreline protection, and erosion protection functions of the wetland and its buffer. The report shall also assess the effects of the proposed modification on those functions. The City may only approve an improvement or land surface modification in a wetland if:~~

- a.1) The project demonstrates consideration and implementation of appropriate mitigation sequencing as outlined in KZC 83.440.2;
- b.2) It will not adversely affect water quality;
- c.3) It will not adversely affect fish, wildlife, or their habitat;
- d.4) It will not have an adverse effect on drainage and/or storm water detention capabilities;
- e.5) It will not lead to unstable earth conditions or create an erosion hazard or contribute to scouring actions;
- f.6) It will not be materially detrimental to any other property or the City as a whole;
- g.7) Compensatory mitigation is provided in accordance with the table in subsection ~~(e)~~8 of this section;
- h.8) Fill material does not contain organic or inorganic material that would be detrimental to water quality or fish and wildlife habitat;
- i.9) All exposed areas are stabilized with vegetation normally associated with native wetlands and/or buffers, as appropriate; and
- j.10) There is no practicable or feasible alternative development proposal that results in less impact to the wetland and its buffer.

10.8. Compensatory Mitigation – A modification may only be approved after the applicant has demonstrated consideration and implementation of appropriate mitigation sequencing as outlined in KZC 83.85.2. All approved impacts to regulated wetlands require compensatory mitigation so that the goal of no net loss of wetland function, value, and acreage is achieved. A mitigation proposal must utilize the mitigation ratios specified below as excerpted from: Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. March 2006. *Wetland Mitigation in*

Washington State – Part 1: Agency Policies and Guidance (Version 1). Washington State Department of Ecology Publication #06-06-011a. Olympia, WA.

-Compensatory Mitigation

Category and Type of Wetland Impacts	Re-establishment or Creation	Rehabilitation Only ¹	Re-establishment or Creation (R/C) and Rehabilitation (RH) ¹	Re-establishment or Creation (R/C) and Enhancement (E) ¹	Enhancement Only ¹
All Category IV	1.5:1	3:1	1:1 R/C and 1:1RH	1:1 R/C and 2:1 E	6:1
All Category III	2:1	4:1	1:1 R/C and 2:1 RH	1:1 R/C and 4:1 E	8:1
Category II	3:1	6:1	1:1 R/C and 4:1 RH	1:1 R/C and 8:1 E	12:1
Category I Forested	6:1	12:1	1:1 R/C and 10:1 RH	1:1 R/C and 20:1 E	24:1
Category I - based on score for functions	4:1	8:1	1:1 R/C and 6:1 RH	1:1 R/C and 12:1 E	16:1
Category I Natural Heritage site	Not allowed	6:1 Rehabilitation of a Natural Heritage site	Not allowed	Not allowed	Case-by-case
Category I Bog	Not allowed	6:1 Rehabilitation of a bog	Not allowed	Not allowed	Case-by-case

On-site mitigation is presumed to be preferable to off-site mitigation. The City may approve a plan to implement all or a portion of the required mitigation off-site, if the off-site mitigation is within the same drainage basin as the property that will be impacted by the project. The applicant shall demonstrate that the off-site mitigation will result in higher wetland functions, values, and/or acreage than on-site mitigation. Required compensatory mitigation ratios shall be the same for on-site or off-site mitigation, or a combination of both.

If the proposed on-site or off-site mitigation plan will result in the creation or expansion of a wetland or its buffer on any property other than the subject property, the plan shall not be approved until the applicant submits to the City a copy of a statement signed by the owners of all affected properties, in a form approved by the City Attorney and recorded in the King

¹ These ratios are based on the assumption that the rehabilitation or enhancement actions implemented represent the average degree of improvement possible for the site. Proposals to implement more effective rehabilitation or enhancement actions may result in a lower ratio, while less effective actions may result in a higher ratio. The distinction between rehabilitation and enhancement is not clear-cut. Instead, rehabilitation and enhancement actions span a continuum. Proposals that fall within the gray area between rehabilitation and enhancement will result in a ratio that lies between the ratios for rehabilitation and the ratios for enhancement

County Department of Elections and Records, consenting to the wetland and/or buffer creation or increase on such property and to the required maintenance and monitoring that may follow the creation or expansion of a wetland or its buffer.

Applicants proposing to alter wetlands or their buffers shall submit a mitigation plan prepared by a qualified professional. The mitigation plan shall consist of a description of the existing functions and values of the wetlands and buffers affected by the proposed project, the nature and extent of impacts to those areas, and the mitigation measures to offset those impacts. The mitigation plan shall also contain a drawing that illustrates the compensatory mitigation elements. The plan and/or drawing shall list plant materials and other habitat features to be installed.

To ensure success of the mitigation plan, the applicant shall submit a monitoring and maintenance program prepared by a qualified professional. At a minimum, the monitoring and maintenance plan shall include the following:

- ~~2-1)~~ The goals and objectives for the mitigation plan;
- ~~3-2)~~ Success criteria by which the mitigation will be assessed;
- ~~4-3)~~ Plans for a five (5) year monitoring and maintenance program;
- ~~5-4)~~ A contingency plan in case of failure; and
- ~~6-5)~~ Proof of a written contract with a qualified professional who will perform the monitoring program.

The monitoring program shall consist of at least two site visits per year by a qualified professional, with annual progress reports submitted to the City and all other agencies with jurisdiction.

The cost of producing and implementing the mitigation plan, the monitoring and maintenance program, reports, and drawing, as well as the review of each component by the City's wetland consultant, shall be borne by the applicant.

9. Wetland Buffer Modification

- a. Departures from the standard buffer requirements shall be approved only after the applicant has demonstrated consideration and implementation of appropriate mitigation sequencing as outlined in KZC 83.440.2.
- b. Approved departures from the standard buffer requirements of KZC 83.450.4(a) allow applicants to modify the physical and biological conditions of portions of the standard buffer for the duration of the approved project. These approved departures from the standard buffer requirements do not permanently establish a new regulatory buffer edge. Future development activities on the subject property may be required to reestablish the physical and biological conditions of the standard buffer.
- c. Modification of Wetland Buffers when Wetland Is Also To Be Modified – Wetland buffer impact is assumed to occur when wetland fill or modification is proposed. Any proposal for wetland fill/modification shall include provisions for establishing a new wetland buffer to be located around the compensatory mitigation sites and to be equal in width to its standard buffer specified in KZC 83.450.4(a) or a buffer reduced in accordance with this section by no more than twenty-five percent (25%) of the standard buffer width in all cases, regardless of wetland category or basin type.
- d. Modification of Wetland Buffers when Wetland Is Not To Be Modified – No land surface modification may occur and no improvement may be located in a wetland buffer, except as provided for in this subsection. Buffer widths may be decreased if an applicant receives a modification request approval.

5.1) Types of Buffer Modifications – Buffers may be reduced through one of two means, either (a) buffer averaging, or (b) buffer reduction with enhancement. A combination of these two buffer reduction approaches shall not be used:

- a) Buffer averaging requires that the area of the buffer resulting from the buffer averaging is equal in size and quality to the buffer area calculated by the standards specified in KZC 83.450.4(a). Buffers may not be reduced at any point by more than twenty-five percent (25%) of the standards specified in KZC 83.450.(a). Buffer averaging calculations shall only consider the subject property.
- b) Buffers may be decreased through buffer enhancement. The applicant shall demonstrate that through enhancing the buffer (by removing invasive plants, planting native vegetation, installing habitat features such as downed logs or snags, or other means), the reduced buffer will function at a higher level than the existing standard buffer. The reduced on-site buffer area must be planted and maintained as needed to yield over time a reduced buffer that is equivalent to undisturbed Puget Lowland forests in density and species composition. At a minimum, a buffer enhancement plan shall provide the following: (a) a map locating the specific area of enhancement; (b) a planting plan that uses native species, including groundcover, shrubs, and trees; and (c) a monitoring and maintenance program prepared by a qualified professional consistent with the standards specified in KZC 83.90.5(d). Buffers may not be reduced at any point by more than twenty-five (25) percent of the standards in KZC 83.450.3(a). Buffer reductions of more than twenty-five (25) percent approved through a Shoreline Variance will be assumed to have direct wetland impacts that must be compensated for as described above under KZC 83.450.8.

6.2) Decisional Criteria – An improvement or land surface modification may only be approved in a wetland buffer only if:

- a) The development activity or buffer modification demonstrates consideration and implementation of appropriate mitigation sequencing as outlined in KZC 83.440.2.
- b) It is consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory Recommendations Report* (Adolfson Associates, Inc., 1998);
- c) It will not adversely affect water quality;
- d) It will not adversely affect fish, wildlife, or their habitat;
- e) It will not have an adverse effect on drainage and/or storm water detention capabilities;
- f) It will not lead to unstable earth conditions or create an erosion hazard;
- g) It will not be materially detrimental to any other property or the City as a whole;
- h) Fill material does not contain organic or inorganic material that would be detrimental to water quality or to fish, wildlife, or their habitat;
- i) All exposed areas are stabilized with vegetation normally associated with native wetland buffers, as appropriate; and
- j) There is no practicable or feasible alternative development proposal that results in less impact to the buffer.

As part of the modification request, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's wetland consultant. The report shall assess the habitat, water quality, storm water detention, ground water recharge, shoreline protection, and erosion protection functions of the buffer; assess the

effects of the proposed modification on those functions; and address the ten (10) criteria listed in this subsection (d)(2) of this section.

10. Wetland Restoration - City approval is required prior to wetland restoration. The City may permit or require the applicant or property owner to restore and maintain a wetland and/or its buffer by removing material detrimental to the area, such as debris, sediment, or vegetation. The City may also permit or require the applicant to restore a wetland or its buffer through the addition of native plants and other habitat features. See also KZC 83.440, Trees in Critical Areas or Critical Area Buffers; and KZC 83.440, Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers. Restoration may be required whenever a condition detrimental to water quality or habitat exists. When wetland restoration is required by the City, the requirements of KZC 83.450.8, Compensatory Mitigation, shall apply.
11. Wetland Access - The City may develop access through a wetland and its buffer in conjunction with a public park, provided the purpose supports education or passive recreation, and is designed to minimize environmental impacts during construction and operation.

83.460 Streams

1. ~~1.~~—Applicability – The following provisions shall apply to streams and stream buffers located within the shoreline jurisdiction, in replace of provisions contained in Chapter 90 KZC. Provisions contained in Chapter 90 KZC that are not addressed in this Section continue to apply, with the exception of the following subsections, which shall not apply within the shoreline jurisdiction:
 - a. KZC 90.20 – General Exceptions
 - b. KZC 90.30 – Definitions
 - c. KZC 90.75 – Minor Lakes
 - d. KZC 90.140 – Reasonable Use Exception
 - e. KZC 90.160 – Appeals
 - ~~f.~~ KZC 90.170 – Planning/Public Works Official Decisions – Lapse of Approval
2. Activities in or Near Streams - No land surface modification may occur and no improvements may be located in a stream or its buffer except as provided in KZC 83.460.3 through 83.460.11.
3. Stream Determinations - The Planning Official shall determine whether a stream or stream buffer is present on the subject property using the following provisions. During or immediately following a site inspection, the Planning Official shall make an initial assessment as to whether a stream exists on any portion of the subject property or surrounding area (which shall be the area within approximately 100 feet of the subject property).

If the initial site inspection indicates the presence of a stream, the Planning Official shall determine, based on the definitions contained in this chapter and after a review of all information available to the City, the classification of the stream.

If this initial site inspection does not indicate the presence of a stream on or near the subject property, no additional stream study will be required.

If an applicant disagrees with the Planning Official's determination that a stream exists on or near the subject property or the Planning Official's classification of a stream, the applicant shall submit a report prepared by a qualified professional approved by the Planning Official that independently evaluates the presence of a stream or the classification of the stream, based on the definitions contained in this chapter.

The Planning Official shall make final determinations regarding the existence of a stream and the proper classification of that stream. The Planning Official's decision under this section shall be used for review of any development activity proposed on the subject property for which an application is received within two years of the decision; provided, that the Planning Official may modify any decision whenever physical circumstances have markedly and demonstrably changed on the subject property or the surrounding area as a result of natural processes or human activity.

4. Stream Buffers and Setbacks

i.a. Stream Buffers – No land surface modification shall occur and no improvement may be located in a stream or its buffer, except as provided in this section. See also KZC 83.85(1), Trees in Critical Areas or Critical Area Buffers; and KZC 83.85(2), Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers. Required, or standard, buffers for streams are as follows:

Stream Buffers

Stream Class	Primary Basins	Secondary Basins
A	75 feet	N/A
B	60 feet	50 feet
C	35 feet	25 feet

Stream buffers shall be measured from each side of the ordinary high water mark of the stream except that where streams enter or exit pipes, the buffer shall be measured in all directions from the pipe opening. Essential improvements to accommodate required vehicular, pedestrian, or utility access to the subject property may be located within those portions of stream buffers which are measured toward culverts from culvert openings.

Where a legally established, improved road right-of-way or structure divides a stream buffer, the Planning Official may approve a modification of the required buffer in that portion of the buffer isolated from the stream by the road or structure, provided the isolated portion of the buffer:

- 1) Does not provide additional protection of the wetland from the proposed development; and
- 2) Provides insignificant biological, geological or hydrological buffer functions relating to the portion of the buffer adjacent to the wetland.

ii.b. Buffer Setback – Structures shall be set back at least 10 feet from the designated or modified stream buffer. The City may allow within this setback minor improvements which would have no potential adverse effect during their construction, installation, use, or maintenance to fish, wildlife, or their habitat or to any vegetation in the buffer or adjacent stream.

iii.c. Storm Water Outfalls – Necessary discharge of storm water through stream buffers and buffer setbacks may be allowed on the surface, but a piped system discharge is prohibited unless approved pursuant to this section. Storm water outfalls (piped systems) may be located within the buffer setback specified in subsection (b) of this section and within the buffers specified in subsection (a) of this section only when the Public Works and Planning Officials both determine, based on a report prepared by a qualified professional under contract to the City and paid for by the applicant, that surface discharge of storm water through the buffer would clearly pose a threat to slope stability; and if the storm water outfall will not:

- 1) Adversely affect water quality;
- 2) Adversely affect fish, wildlife, or their habitat;
- 3) Adversely affect drainage or storm water detention capabilities;

- 4) Lead to unstable earth conditions or create erosion hazards or contribute to scouring actions;
- 5) Be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas.

Storm water facilities shall minimize potential impacts to the wetland or wetland buffer by meeting the following design standards:

- ~~1)~~6) Catch basins must be installed as far as feasible from the buffer boundary.
- ~~2)~~7) Outfalls must be designed to reduce the chance of adverse impacts as a result of concentrated discharges from pipe systems. This may include:
 - ~~a.)~~a) Installation of the discharge end as far as feasible from the sensitive area, and
 - ~~b.)~~b) Use of appropriate energy dissipation at the discharge end.

~~iv.)~~d. Water Quality Facilities – Detention and water quality treatment devices, and other similar facilities as determined by the City, shall not be located within the stream buffers or buffer setbacks of this section except as provided below. The City may only approve a proposal to install a water quality facility within the outer one-half (1/2) of a stream buffer if a suitable location outside of the buffer is not available and only if:

- ~~a.)~~1) It will not adversely affect water quality;
- ~~b.)~~2) It will not adversely affect fish, wildlife, or their habitat;
- ~~c.)~~3) It will not adversely affect drainage or storm water detention capabilities;
- ~~d.)~~4) It will not lead to unstable earth conditions or create erosion hazards or contribute to scouring actions;
- ~~e.)~~5) It will not be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas;
- ~~f.)~~6) The existing buffer is already degraded as determined by a qualified professional;
- ~~g.)~~7) Its installation of the water quality facility would be followed immediately by enhancement of an area equal in size and immediately adjacent to the affected portion of the buffer; and
- ~~h.)~~8) Once installed, it would not require any further disturbance or intrusion into the buffer.

The City may only approve a proposal by a public agency to install a water quality facility elsewhere in a stream buffer if Criteria 9 – 12 (below) are met in addition to 1 – 8 (above):

- ~~k.)~~9) The project includes enhancement of the entire on-site buffer;
- ~~l.)~~10) The project would provide an exceptional ecological benefit off-site;
- ~~m.)~~11) The water quality facility, once installed, would not require any further disturbance or intrusion into the buffer; and
- ~~n.)~~12) There is no practicable or feasible alternative proposal that results in less impact to the buffer.

- e. Utilities and Rights-of-Way – Provided that activities will not increase the impervious area or reduce flood storage capacity, the following work shall be allowed in critical areas and their buffers subject to City review after appropriate mitigation sequencing per KZC 83.440.2 has been considered and implemented:

- b.1) All utility work in improved City rights-of-way;
- e.2) All normal and routine maintenance, operation and reconstruction of existing roads, streets, and associated rights-of-way and structures; and
- d.3) Construction of sewer or water lines that connect to existing lines in a sensitive area or buffer where no feasible alternative location exists based on an analysis of technology and system efficiency.

All affected critical areas and buffers will be expeditiously restored to their pre-project condition or better. For purposes of this subsection only, "improved City rights-of-way" include those rights-of-way that have improvements only underground, as well as those with surface improvements.

- f. Minor Improvements – Minor improvements may be located within the sensitive area buffers specified in subsection 83.460.4. These minor improvements shall be located within the outer one-half of the sensitive area buffer, except where approved stream crossings are made. The City may only approve a proposal to construct a minor improvement within a sensitive area buffer if:

- 1) It will not adversely affect water quality;
- 2) It will not adversely affect fish, wildlife, or their habitat;
- 3) It will not adversely affect drainage or storm water detention capabilities;
- 4) It will not lead to unstable earth conditions or create erosion hazards or contribute to scouring actions;
- 5) It will not be materially detrimental to any other property in the area of the subject property or to the City as a whole, including the loss of significant open space or scenic vistas; and
- 6) It supports public or private shoreline access.

The City may require the applicant to submit a report prepared by a qualified professional which describes how the proposal will or will not comply with the criteria for approving a minor improvement.

- 5. Stream Buffer Fence or Barrier - Prior to beginning development activities, the applicant shall install a six-foot-high construction-phase chain link fence or equivalent fence, as approved by the Planning Official and consistent with City standards, along the upland boundary of the entire stream buffer with silt screen fabric. The construction-phase fence shall remain upright in the approved location for the duration of development activities.

Upon project completion, the applicant shall install between the upland boundary of all stream buffers and the developed portion of the site, either (1) a permanent three- to four-foot-tall split rail fence; or (2) equivalent barrier, as approved by the Planning Official. Installation of the permanent fence or equivalent barrier must be done by hand where necessary to prevent machinery from entering the stream or its buffer.

- 6. Permit Process -

- a. The City shall consolidate and integrate the review and processing of the critical areas aspects of the proposal with the shoreline permit required for the proposed development activity, except as noted under subsection b and c.

- b. All Stream Relocation or Modification or Stream Buffer Modification affecting > one-third (1/3) of the standard buffer require a Shoreline Variance pursuant to Process IIA, described in Chapter 141, except as follows:

Development activity or land surface modification approved under subsection 4 above (Stream Buffer and Setback) or subsection 10 (Stream Crossings) and 11 (Stream Rehabilitation) below.

i. Applicants for a detached dwelling who are unable to comply with the specific standards of this section may seek approval pursuant to the following standards and procedures:

1. When allowed - A reasonable use exception may be granted if the strict application of this section would preclude all reasonable use of a site. The reasonable use process within the shoreline management area applies to lots that are significantly constrained by critical area and critical area buffers.
2. Submittal Requirements – As part of the reasonable use request, in addition to submitting an application, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's qualified professional. The report shall include the following:
 - a) A determination and delineation of the sensitive area and sensitive area buffer containing all the information specified in KZC 83.450(3) for a wetland or based on the definitions contained in this chapter for a stream;
 - b) An analysis of whether any other reasonable use with less impact on the sensitive area and sensitive area buffer is possible;
 - c) Sensitive site design and construction staging of the proposal so that the development will have the least practicable impact on the sensitive area and sensitive area buffer;
 - d) A description of the area of the site which is within the sensitive area or within the setbacks or buffers required by this chapter;
 - e) A description of protective measures that will be undertaken such as siltation curtains, hay bales and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities;
 - f) An analysis of the impact that the amount of development proposed would have on the sensitive area and the sensitive area buffer;
 - g) How the proposal minimizes to the greatest extent possible net loss of sensitive area and/or sensitive area buffer functions;
 - h) Whether the improvement is located away from the sensitive area and the sensitive area buffer to the greatest extent possible;
 - i) Information specified in KZC 83.450(8); and
 - j) Such other information or studies as the Planning Official may reasonably require.
3. Decisional Criteria – The City shall grant approvals for reasonable use exceptions only if all of the following criteria are met:
 - a) That no permitted type of land use for the property with less impact on the sensitive area and associated buffer is feasible and reasonable, which in the Natural Environment shall be one single-family dwelling;
 - b) That there is no feasible on-site alternative to the proposed activities, including reduction in size, density or intensity, phasing of project

implementation, change in timing of activities, revision of road and lot layout, and/or related site planning considerations, that would allow a reasonable economic use with less adverse impacts to the sensitive area and buffer;

- c) Unless the applicant can demonstrate unique circumstances related to the subject property, the amount of site area that will be disturbed by structure placement or other land alteration, including but not limited to grading, utility installation, decks, driveways, paving, and landscaping, shall not exceed 3,000 square feet. The amount of allowable disturbance shall be that which will have the least practicable impact on the sensitive area and the sensitive area buffer given the characteristics and context of the subject property, sensitive area, and buffer;
- d) The applicant shall pay for a qualified professional to help with the City's determination of the appropriate limit for disturbance;
- e) The proposal is compatible in design, scale and use with other legally established development in the immediate vicinity of the subject property in the same zone and with similar site constraints;
- f) The proposal utilizes to the maximum extent possible innovative construction, design, and development techniques, including pervious surfaces, which minimize to the greatest extent possible net loss of sensitive area functions and values;
- g) The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the property;
- h) The proposal meets the mitigation, maintenance, and monitoring requirements of this chapter;
- i) The inability to derive reasonable use is not the result of actions by the applicant after the effective date of the ordinance codified in this chapter or its predecessor; and
- j) The granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances.

—iv. Modifications and Conditions – The City may approve reduction in required yards or buffer setbacks and may allow the maximum height of structures to be increased up to five feet to reduce the impact on the sensitive area and sensitive area buffer. The required front yard may be reduced by up to 50 percent where the applicant demonstrates that the development cannot meet the City's code requirements without encroaching into the sensitive area buffer. The City shall include in the written decision any conditions and restrictions that the City determines are necessary to eliminate or minimize any undesirable effects of approving the exception. In the Natural Environment, applicants for a detached dwelling who are unable to comply with the specific standards of this section may seek approval pursuant to the following standards and procedures:

—Process— If the strict application of this section would preclude all reasonable use of a site, an owner of real property may apply for a reasonable use exception to this chapter.

—The application shall be considered under Process IIA of Chapter 150-KZC; provided, that for a single family development proposal which does not exceed a total of 3,000 square feet of site disturbance, and does not

~~encroach into the sensitive area, but only the associated buffer, the application shall be considered pursuant to subsection (7) of this section. Reasonable Use Process: Administrative Alternative.~~

~~In addition, the application shall be processed as a Shoreline Conditional Use Permit under the provisions of Chapter 141 KZC and WAC 173-27.~~

~~Submittal Requirements — As part of the reasonable use request, in addition to submitting an application, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's qualified professional. The report shall include the following:~~

~~A determination and delineation of the sensitive area and sensitive area buffer containing all the information specified in KZC 83.450(3) for a wetland or based on the definitions contained in this chapter for a stream;~~

~~An analysis of whether any other reasonable use with less impact on the sensitive area and sensitive area buffer is possible;~~

~~Sensitive site design and construction staging of the proposal so that the development will have the least practicable impact on the sensitive area and sensitive area buffer;~~

~~A description of the area of the site which is within the sensitive area or within the setbacks or buffers required by this chapter;~~

~~A description of protective measures that will be undertaken such as siltation curtains, hay bales and other siltation prevention measures, and scheduling the construction activity to avoid interference with wildlife and fisheries rearing, nesting or spawning activities;~~

~~An analysis of the impact that the amount of development proposed would have on the sensitive area and the sensitive area buffer;~~

~~How the proposal minimizes to the greatest extent possible net loss of sensitive area functions;~~

~~Whether the improvement is located away from the sensitive area and the sensitive area buffer to the greatest extent possible; and~~

~~Such other information or studies as the Planning Official may reasonably require.~~

~~Decisional Criteria — The City shall grant applications for reasonable use exceptions only if all of the following criteria are met:~~

~~That no permitted type of land use for the property with less impact on the sensitive area and associated buffer is feasible and reasonable, which in a residential zone shall be one single family dwelling and in a commercial or industrial zone shall be an office use;~~

~~That there is no feasible on-site alternative to the proposed activities, including reduction in size, density or intensity, phasing of project implementation, change in timing of activities, revision of road and lot layout, and/or related site planning considerations, that would allow a reasonable economic use with less adverse impacts to the sensitive area and buffer;~~

~~Unless the applicant can demonstrate unique circumstances related to the subject property, the amount of site area that will be disturbed by~~

~~structure placement or other land alteration, including but not limited to grading, utility installation, decks, driveways, paving, and landscaping, shall not exceed the following limits:~~

~~If the subject property contains 6,000 square feet of area or less, no more than 50 percent of the site may be disturbed.~~

~~If the subject property contains more than 6,000 square feet but less than 30,000 square feet, no more than 3,000 square feet may be disturbed.~~

~~For properties containing 30,000 square feet or more, the maximum allowable site disturbance shall be between 3,000 square feet and 10 percent of the lot area, to be determined by the City on a case-by-case basis.~~

~~The amount of allowable disturbance shall be that which will have the least practicable impact on the sensitive area and the sensitive area buffer given the characteristics and context of the subject property, sensitive area, and buffer.~~

~~The applicant shall pay for a qualified professional to help with the City's determination of the appropriate limit for disturbance;~~

~~The proposal is compatible in design, scale and use with other legally established development in the immediate vicinity of the subject property in the same zone and with similar site constraints;~~

~~The proposal utilizes to the maximum extent possible innovative construction, design, and development techniques, including pervious surfaces, which minimize to the greatest extent possible not loss of sensitive area functions and values;~~

~~The proposed development does not pose an unacceptable threat to the public health, safety, or welfare on or off the property;~~

~~The proposal meets the mitigation, maintenance, and monitoring requirements of this chapter;~~

~~The inability to derive reasonable use is not the result of actions by the applicant after the effective date of the ordinance codified in this chapter or its predecessor; and~~

~~The granting of the exception will not confer on the applicant any special privilege that is denied by this chapter to other lands, buildings, or structures under similar circumstances.~~

~~Modifications and Conditions—The City may approve reduction in required yards or buffer setbacks and may allow the maximum height of structures to be increased up to five feet to reduce the impact on the sensitive area and sensitive area buffer. The City shall include in the written decision any conditions and restrictions that the City determines are necessary to eliminate or minimize any undesirable effects of approving the exception.~~

~~Process: Administrative Alternative—If, in order to provide reasonable use of a site, the standards of this chapter need to be modified and the proposed improvement does not exceed a total of 3,000 square feet of site impact, including but not limited to structures, paved areas, landscaping, decks, driveways, utility installation, and grading, the Planning Director is authorized~~

~~to approve a reasonable use exception subject to subsections (4) and (5) of this section and considered under Process I of Chapter 145 KZC. Administrative approval shall also be subject to the following limitations:~~

~~The required front yard may be reduced by up to 50 percent where the applicant demonstrates that the development cannot meet the City's code requirements without encroaching into the sensitive area buffer.~~

~~2) The encroachment of the proposed development shall only be into the sensitive area buffer, not the sensitive area.~~

e.

7. Stream Buffer Modification

~~1)a.~~ Approved departures from the standard buffer requirements of KZC 83.460.4(a) allow applicants to modify the physical and biological conditions of portions of the standard buffer for the duration of the approved project. These approved departures from the standard buffer requirements do not permanently establish a new regulatory buffer edge. Future development activity on the subject property may be required to reestablish the physical and biological conditions of the standard buffer.

~~2)b.~~ Types of Buffer Modification – Buffers may be reduced through one of two means, either (1) buffer averaging; or (2) buffer reduction with enhancement. A combination of these two buffer reduction approaches shall not be used.

~~a.1)~~ Buffer averaging requires that the area of the buffer resulting from the buffer averaging be equal in size and quality to the buffer area calculated by the standards specified in KZC 83.460.4(a). Buffers may not be reduced at any point by more than one-third (1/3) of the standards in KZC 83.460.4(a). Buffer averaging calculations shall only consider the subject property.

~~b.2)~~ Buffers may be decreased through buffer enhancement. The applicant shall demonstrate that through enhancing the buffer (by removing invasive plants, planting native vegetation, installing habitat features such as downed logs or snags, or other means) the reduced buffer will function at a higher level than the standard existing buffer. The reduced on-site buffer area must be planted and maintained as needed to yield over time a reduced buffer that is equivalent to an undisturbed Puget Lowland forests in density and species composition. A buffer enhancement plan shall at a minimum provide the following: (1) a map locating the specific area of enhancement; (2) a planting plan that uses native species, including groundcover, shrubs, and trees; and (3) a monitoring and maintenance program prepared by a qualified professional consistent with the standards specified in KZC 83.450.8. Buffers may not be reduced at any point by more than one-third (1/3) of the standards in KZC 83.460.4(a).

a. Decisional Criteria – An improvement or land surface modification may only be approved in a stream buffer only if:

~~a.1)~~ The project demonstrates consideration and implementation of appropriate mitigation sequencing as outlined in KZC 83.440.2.

~~b.2)~~ It is consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory Recommendations Report* (Adolfson Associates, Inc., 1998);

~~c.3)~~ It will not adversely affect water quality;

~~d.4)~~ It will not adversely affect fish, wildlife, or their habitat;

~~e.5)~~ It will not have an adverse effect on drainage and/or storm water detention capabilities;

f.6) It will not lead to unstable earth conditions or create an erosion hazard or contribute to scouring actions;

g.7) It will not be materially detrimental to any other property or the City as a whole;

h.8) Fill material does not contain organic or inorganic material that would be detrimental to water quality or to fish, wildlife, or their habitat;

i.9) All exposed areas are stabilized with vegetation normally associated with native stream buffers, as appropriate; and

j.10) There is no practicable or feasible alternative development proposal that results in less impact to the buffer.

As part of the modification request, the applicant shall submit a report prepared by a qualified professional and fund a review of this report by the City's wetland consultant. The report shall assess the habitat, water quality, storm water detention, ground water recharge, and erosion protection functions of the buffer; assess the effects of the proposed modification on those functions; and address the ten criteria listed in this subsection.

8. Stream Relocation or Modification - The City may only permit a stream to be relocated or modified if water quality, conveyance, fish and wildlife habitat, wetland recharge (if hydrologically connected to a wetland), and storm water detention capabilities of the stream will be significantly improved by the relocation or modification. Convenience to the applicant in order to facilitate general site design may not be considered.

A proposal to relocate or modify a Class A stream may only be approved only if the Washington Department of Fish and Wildlife issues a Hydraulic Project Approval for the project. Furthermore, all modifications shall be consistent with *Kirkland's Streams, Wetlands and Wildlife Study* (The Watershed Company, 1998) and the *Kirkland Sensitive Areas Regulatory Recommendations Report* (Adolfson Associates, Inc., 1998).

If the proposed stream activity will result in the creation or expansion of a stream or its buffer on any property other than the subject property, the City shall not approve the plan until the applicant submits to the City a copy of a statement signed by the owners of all affected properties, in a form approved by the City Attorney and recorded in the King County Department of Elections and Records, consenting to the sensitive area and/or buffer creation or increase on such property.

Prior to the City's approval of a stream relocation or modification, the applicant shall submit a stream relocation/modification plan prepared by a qualified professional approved by the City. The cost of producing, implementing, and monitoring the stream relocation/modification plan, and the cost of review of that plan by the City's stream consultant shall be borne by the applicant. This plan shall contain or demonstrate the following:

i.a.) A topographic survey showing existing and proposed topography and improvements;

ii.b.) The filling and revegetation of the existing stream channel;

iii.c.) A proposed phasing plan specifying time of year for all project phases;

iv.d.) The ability of the new stream channel to accommodate flow and velocity of 100-year storm events; and

v.e.) The design and implementation features and techniques listed below, unless clearly and demonstrably inappropriate for the proposed relocation or modification:

- 1) The creation of natural meander patterns;
- 2) The formation of gentle and stable side slopes, no steeper than two feet horizontal to one-foot vertical, and the installation of both temporary and permanent erosion-control features (the use of native vegetation on stream banks shall be emphasized);

- 3) The creation of a narrow sub-channel (thalweg) against the south or west stream bank;
- 4) The utilization of native materials;
- 5) The installation of vegetation normally associated with streams, emphasizing native plants with high food and cover value for fish and wildlife;
- 6) The creation of spawning areas, as appropriate;
- 7) The re-establishment of fish population, as appropriate;
- 8) The restoration of water flow characteristics compatible with fish habitat areas;
- 9) Demonstration that the flow and velocity of the stream after relocation or modification shall not be increased or decreased at the points where the stream enters and leaves the subject property, unless the change has been approved by the City to improve fish and wildlife habitat or to improve storm water management;
- 10) A written description of how the proposed relocation or modification of the stream will significantly improve water quality, conveyance, fish and wildlife habitat, wetland recharge (if hydrologically connected to a wetland), and storm water detention capabilities of the stream; and
- 11) A monitoring and maintenance plan consistent with KZC 83.450.8.

Prior to diverting water into a new stream channel, a qualified professional approved by the City shall inspect the completed new channel and issue a written report to the City stating that the new stream channel complies with the requirements of this section. The cost for this inspection and report shall be borne by the applicant.

9. Bulkheads in Streams - Bulkheads are not permitted along a stream, except as provided in this subsection. The City shall allow a bulkhead to be constructed only if:

i.a. It is not located within a wetland or between a wetland and a stream;

ii.b. It is needed to prevent significant erosion;

iii.c. The use of vegetation and/or other biological materials would not sufficiently stabilize the stream bank to prevent significant erosion;

iv.d. The applicant submits a plan prepared by a qualified professional approved by the City that shows a bulkhead and implementation techniques that meet the following criteria:

2)1) There will be no adverse impact to water quality;

3)2) There will be no adverse impact to fish, wildlife, and their habitat;

4)3) There will be no increase in the velocity of stream flow, unless approved by the City to improve fish habitat;

5)4) There will be no decrease in flood storage volumes;

6)5) Neither the installation, existence, nor operation of the bulkhead will lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and

7)6) Neither the installation, existence, nor operation of the bulkhead will be detrimental to any other property or the City as a whole; and

v.e. The Washington Department of Fish and Wildlife issues a Hydraulic Project Approval for the project.

The bulkhead shall be designed consistent with Washington Department of Fish and Wildlife's *Integrated Streambank Protection Guidelines* (2003, or as revised). The bulkhead shall be designed and constructed to minimize the transmittal of water current and energy to other properties. Changes in the horizontal or vertical configuration of the land shall be kept

to a minimum. Fill material used in construction of a bulkhead shall be non-dissolving and non-decomposing. The applicant shall also stabilize all exposed soils by planting native riparian vegetation with high food and cover value for fish and wildlife.

10. Stream Crossings - Stream crossings are not permitted, except as specified in this section. The City shall review and decide upon an application to cross a stream with an access drive, driveway, or street. A stream crossing shall be allowed only if:

i.a. The stream crossing is necessary to provide required vehicular, pedestrian, or utility access to the subject property. Convenience to the applicant in order to facilitate general site design shall not be considered;

ii.b. The Washington Department of Fish and Wildlife issues a Hydraulic Project Approval for the project; and

iii.c. The applicant submits a plan prepared by a qualified professional approved by the City that shows the crossing and implementation techniques that meet the following criteria:

- 1) There will be no adverse impact to water quality;
- 2) There will be no adverse impact to fish, wildlife, and their habitat;
- 3) There will be no increase in the velocity of stream flow, unless approved by the City to improve fish habitat;
- 4) There will be no decrease in flood storage volumes;
- 5) Neither the installation, existence, nor operation of the stream crossing will lead to unstable earth conditions or create erosion hazards or contribute to scouring actions; and
- 6) Neither the installation, existence, nor operation of the stream crossing will be detrimental to any other property or to the City as a whole.

The stream crossing shall be designed and constructed to allow passage of fish inhabiting the stream or which may inhabit the stream in the future. The stream crossing shall be designed to accommodate a 100-year storm event. The applicant shall at all times maintain the crossing so that debris and sediment do not interfere with free passage of water, wood and fish. The City shall require a security or perpetual culvert maintenance agreement under KZC 90.145 for continued maintenance of the stream crossing.

A bridge is the preferred stream crossing method. If a bridge is not economically or technologically feasible, or would result in greater environmental impacts than a culvert, a proposal for a culvert may be approved if the culvert complies with the above criteria and the following additional criteria:

- 7) The culvert must be designed consistent with Washington Department of Fish and Wildlife's *Design of Road Culverts for Fish Passage* (2003, or as revised).

If a proposed project requires approval through a Shoreline Conditional Use, the City may require that any stream in a culvert on the subject property be opened, relocated, and restored, consistent with the provisions of this subsection.

11. Stream Rehabilitation - City approval is required prior to stream rehabilitation. The City may permit or require the applicant or property owner to restore and maintain a stream and/or its buffer by removing material detrimental to the stream and its surrounding area such as debris, sediment, or vegetation. The City may also permit or require the applicant to restore a stream or its buffer through the addition of native plants and other habitat features. See also KZC 83.440, Trees in Critical Areas or Critical Area Buffers; and KZC 83.440, Mitigation and Restoration Plantings in Critical Areas and Critical Area Buffers. Restoration may be required at any time that a condition detrimental to water quality or habitat exists. When stream rehabilitation is required by the City, the mitigation plan and monitoring requirements of KZC 83.450.8, shall apply.

83.470 Geologically hazardous areas.

1. The City of Kirkland Geologically Hazardous Area Regulations, as codified in Chapter 85 KZC (dated XX, Ordinance # XX), are herein incorporated into this master program.
2. In addition to the required information contained in KZC 85.15.3, the geotechnical report shall also contain any additional information specified under the definition of Geotechnical Report contained in KZC Section 83.80.

83.480 Flood Hazard Reduction.

1. The City of Kirkland Flood Damage Regulations, as codified in Chapter 21.56 KMC (dated XX, Ordinance # XX), are herein incorporated into this master program.

83.490 Archaeological and Historic Resources

1. General - Uses, developments and activities on sites of historic or archeological significance or sites containing things of historic or archeological significance must not unreasonably disrupt or destroy the historic or archeological resource.
2. Standards -
 - a. Permits submitted for land surface modification or development activity in areas documented by the Washington State Office of Archaeology and Historic Preservation to contain archaeological resources shall include a site inspection and a draft written report prepared by a qualified professional archaeologist, approved by the City, prior to the issuance of a permit. In addition, the archaeologist will provide copies of the draft report to the affected tribe(s) and the State Office of Archaeology and Historic Preservation. After consultation with these agencies, the archaeologist shall provide a final report that includes any recommendations from the affected tribe(s) and the State Office of Archaeology and Historic Preservation on avoidance or mitigation of the proposed project's impacts. The Planning Official will condition project approval, based on the final report from the archaeologist, to ensure that impacts to the site are avoided or minimized consistent with federal and state law.
 - b. Shoreline permits shall contain provisions that require developers to immediately stop work and notify the City if any potential archaeological resources are uncovered during land surface modification or development activity. In such cases, the developer shall be required to provide for a site inspection and evaluation by a qualified professional archaeologist, approved by the City, to ensure that all possible valuable archaeological data is properly handled. The City shall subsequently notify the affected tribe and the State Office of Archaeology and Historic Preservation. Failure to comply with this requirement shall be considered a violation of the shoreline permit.
 - c. If identified historical or archaeological resources are present, site planning and access to such areas shall be designed and managed to give maximum protection to the resource and surrounding environment.
 - d. Interpretative signs, historical markers and other similar exhibits providing information about historical and archaeological features and natural areas shall be provided when appropriate.
 - e. In the event that unforeseen factors constituting an emergency as defined in RCW 90.58.030 that necessitate rapid action to retrieve or preserve artifacts or data identified above, the

project may be exempted from the permit requirement of these regulations. The City shall notify the State Department of Ecology, the State Attorney General's Office and the State Historic Preservation Office of such a waiver in a timely manner.

- f. Archaeological sites are subject to RCW 2744 (Indian Graves and Records) and RCW 2753 (Archaeological Sites and Records) and shall comply with WAC 25-48 or its successor as well as the provisions of this chapter.
- g. Proposed changes to historical properties which are registered on the State or National Historic Register are subject to review under the National and State Registers' review process.

Use Specific Regulations

- 83.180 Shoreline Development Standards
- 83.190 General
- 83.200 Residential Development
- 83.210 Commercial Uses.
- 83.220 Industrial Uses
- 83.230 Recreational Development
- 83.240 Transportation Facilities
- 83.250 Utilities
- 83.260 Land Division

Shoreline Development Standards

83.180 Shoreline Development Standards

1. General - Except as otherwise stated, the long range plan, zoning regulations, critical areas regulations, subdivision regulations, and other adopted regulatory provisions apply within shoreline jurisdiction. In the event the provisions of this Program conflict with provisions of other city regulations, the more protective of shoreline resources shall prevail.
2. Development Standards Chart - The following chart establishes the minimum required dimensional requirements for development. KZC Section 83.170 contains an overview of the activities permitted under each of the use classifications contained in the development standards chart. Additional standards may be established in Sections 83.190 through 83.260. Dimensional standards specified in this Chapter shall not exceed the geographic limit of the shoreline jurisdiction.

SHORELINE DEVELOPMENT STANDARDS

83.180. 3

DEVELOPMENT STANDARDS	SHORELINE ENVIRONMENT					
	Aquatic	Natural	Urban Conservancy	Residential - L	Residential - M/H	Urban Mixed
Residential Uses						
Detached Dwelling Units and Accessory Dwelling Units						
Minimum Lot Size	n/a	12,500 sq. ft.	12,500 sq. ft.	12,500 sq. ft. except for the following: <ul style="list-style-type: none"> 5,000 sq. ft. if located on east side of Lake St S, at 7th Ave S; and 7,200 sq. ft. if subject to the Historic Preservation provisions of KMC 22.28.048 	3,600 sq. ft.	3,600 sq. ft.
Shoreline Setback	n/a	[Placeholder]	[Placeholder]	[Placeholder]	[Placeholder]	[Placeholder]
Maximum Lot Coverage	n/a	50%	n/a	50%	60%	80% except for the following: <ul style="list-style-type: none"> In the CBD, 100% for properties that do not

DEVELOPMENT STANDARDS	SHORELINE ENVIRONMENT					
	Aquatic	Natural	Urban Conservancy	Residential - L	Residential - M/H	Urban Mixed
Maximum Height of Structure ³	n/a	25' above ABE ¹	If adjoining the Residential-L Shoreline Environment, then 25' above ABE. Otherwise, 30' above ABE.	25' above ABE	If adjoining the Residential-L Shoreline Environment, then 25' above ABE. Otherwise, 30' above ABE.	about Lake Washington; otherwise 90% 30' above ABE
Other Residential Uses (Attached, Stacked, and Detached Dwelling Units; Assisted Living Units; Convalescent Center or Nursing Home)						
Density ²	n/a	n/a	n/a	n/a	1,800 sq. ft./unit for up to 2 dwelling units if the public access provisions of KZC 83.370 are met; otherwise 3,600 sq. ft./unit	No minimum lot size in CBD; otherwise 1,800 sq. ft./unit
Shoreline Setback	n/a	n/a	n/a	n/a	[Placeholder]	[Placeholder]
Maximum Lot Coverage	n/a	n/a	n/a	n/a	80%	80% except for the following: <ul style="list-style-type: none"> In the CBD, 100% on properties that do not abut Lake Washington; otherwise 90%
Maximum Height of Structure ³	n/a	n/a	n/a	n/a	30' above ABE ⁴	30' above ABE, except for the following:

¹ Structure height may be increased to 30' above ABE. See KZC 83.180.6.c.1)a).

² For density purposes, two assisted living units shall constitute one dwelling unit.

DEVELOPMENT STANDARDS	SHORELINE ENVIRONMENT					
	Aquatic	Natural	Urban Conservancy	Residential - L	Residential - M/H	Urban Mixed
						<ul style="list-style-type: none"> In the JBD, 28' above ABE if located on west side of 98th Avenue NE; otherwise 39' above ABE^{Error! Bookmark not defined.} In the CBD, [Placeholder] In the PLA 15A zone located south of NE 52nd Street, structure height may be increased to 40' above ABE.^{5, Error! Bookmark not defined.} Otherwise, mixed-use developments approved under a Master Plan shall comply with the Master Plan provisions.⁶
Commercial Uses						
Minimum Lot Size	n/a	n/a	n/a	n/a	n/a	n/a
Shoreline Setback	n/a	n/a	n/a	n/a	n/a	n/a

³ The height limit is restricted to that portion of the building physically located within the shoreline jurisdiction and applies to landward structures only.

⁴ Permitted increases in building height are addressed in KZC 83.180.6.c).

⁵ Structure height may be increased to 35' above ABE. See KZC 83.180.6.c.1)b).

⁶ See KZC 83.180.6.c.1)c).

⁶ See KZC 83.180.6.c.1)d).

DEVELOPMENT STANDARDS	SHORELINE ENVIRONMENT					
	Aquatic	Natural	Urban Conservancy	Residential - L	Residential - M/H	Urban Mixed
Maximum Lot Coverage	n/a	n/a	50%	n/a	80%	80% except for the following: <ul style="list-style-type: none"> In the CBD, 100% on properties that do not abut Lake Washington; otherwise 90%
Maximum Height of Structure ³	n/a	n/a	If adjoining the Residential-L Shoreline Environment, then 25' above ABE. Otherwise, 30' above ABE. ⁴	n/a	30' above ABE ⁴	30' above ABE, except for the following: <ul style="list-style-type: none"> In the JBD, 28' above ABE if located on west side of 98th Avenue NE; otherwise 39' above ABE^{Error! Bookmark not defined.} In the CBD, [Placeholder] ^{Error! Bookmark not defined.} In the PLA 15A zone located south of NE 52nd Street, structure height may be increased to 40' above ABE.^{5>Error! Bookmark not defined.} Otherwise, mixed-use developments approved under a Master Plan shall comply with the Master Plan provisions.⁶

DEVELOPMENT STANDARDS	SHORELINE ENVIRONMENT					
	Aquatic	Natural	Urban Conservancy	Residential - L	Residential - M/H	Urban Mixed
Industrial Uses						
Minimum Lot Size	n/a	n/a	n/a	n/a	n/a	n/a
Shoreline Setback	n/a	n/a	n/a	n/a	n/a	
Maximum Lot Coverage	n/a	n/a	n/a	n/a	n/a	80% except for the following: <ul style="list-style-type: none"> In the CBD, 100% on properties that do not abut Lake Washington; otherwise 90%
Maximum Height of Structure ³	n/a	n/a	n/a	n/a	n/a	30' above ABE, except for the following: <ul style="list-style-type: none"> In the JBD, 28' above ABE if located on west side of 98th Avenue NE; otherwise 39' above ABE In the CBD, [Placeholder] <small>Error! Bookmark not defined.</small>
Recreational Uses						
Minimum Lot Size	n/a	n/a	n/a	n/a	n/a	n/a
Shoreline Setback	n/a					
Maximum Lot Coverage	n/a	10%	30%	30%	80%	80% except for the following: <ul style="list-style-type: none"> In the CBD, 100% on

DEVELOPMENT STANDARDS		SHORELINE ENVIRONMENT					
		Aquatic	Natural	Urban Conservancy	Residential - L	Residential - M/H	Urban Mixed
Maximum Height of Structure ³		n/a	25' above ABE	If adjoining the Residential-L Shoreline Environment, then 25' above ABE. Otherwise, 30' above ABE ⁴	25' above ABE	30' above ABE ⁴	properties that do not abut Lake Washington; otherwise 90% 30' above ABE, except for the following: <ul style="list-style-type: none"> In the JBD, 28' above ABE if located on west side of 98th Avenue NE; otherwise 39' above ABE In the CBD, [Placeholder] Error! Bookmark not defined.
Institutional Uses							
Minimum Lot Size		n/a	n/a	n/a	n/a	n/a	n/a
Shoreline Setback		n/a	n/a				
Maximum Lot Coverage		n/a	n/a	50%	50%	80%	80% except for the following: <ul style="list-style-type: none"> In the CBD, 100% on properties that do not abut Lake Washington; otherwise 90%
Maximum height of structure ³		n/a	n/a	If adjoining the Residential-L Shoreline	25' above ABE	30' above ABE ⁴	30' above ABE, except for the following: <ul style="list-style-type: none"> In the JBD, 28' above

DEVELOPMENT STANDARDS	SHORELINE ENVIRONMENT					
	Aquatic	Natural	Urban Conservancy	Residential - L	Residential - M/H	Urban Mixed
			Environment, then 25' above ABE. Otherwise, 30' above ABE ⁴			<p>ABE if located on west side of 98th Avenue NE; otherwise 39' above ABE^{Error! Bookmark not defined.}</p> <ul style="list-style-type: none"> In the CBD, [Placeholder], ^{Error! Bookmark not defined.}
Transportation						
Minimum Lot Size	n/a	n/a	n/a	n/a	n/a	n/a
Shoreline Setback	n/a					
Maximum Lot Coverage	n/a	n/a	n/a	n/a	n/a	n/a
Maximum Height of Structure ³	n/a	n/a	n/a	n/a	n/a	n/a
Utilities						
Minimum Lot Size	n/a	n/a	n/a	n/a	n/a	n/a
Shoreline Setback	n/a					
Maximum Lot Coverage	n/a	5%	30%	50%	80%	<p>80% except for the following:</p> <ul style="list-style-type: none"> In the CBD, 100% on properties that do not abut Lake Washington; otherwise 90%

DEVELOPMENT STANDARDS	SHORELINE ENVIRONMENT						
Maximum Height of Structure ³	Aquatic	n/a	Natural	Urban Conservancy	Residential - L	Residential - M/H	Urban Mixed
		25' above ABE	If adjoining the Residential-L Shoreline Environment, then 25' above ABE. Otherwise, 30' above ABE ⁴	25' above ABE	30' above ABE ⁴		30' above ABE, except for the following: <ul style="list-style-type: none"> In the JBD, 28' above ABE if located on west side of 98th Avenue NE; otherwise 39' above ABE^{Error! Bookmark not defined.} In the CBD, [Placeholder] ^{Error! Bookmark not defined.}

3. Calculation of Minimum Lot Size or Density –
- a. May not use lands waterward of the ordinary high watermark to determine lot size or to calculate allowable density.
 - b. For properties that are only partially located within the shoreline jurisdiction, the allowed density within the shoreline jurisdiction shall be based upon the land area located within the shoreline jurisdiction only. If dwelling units would only be partially located within the shoreline jurisdiction, the City may approve an increase in the actual number of units in the shoreline jurisdiction, as permitted under the density standards established in subsection b) above, provided that the equivalent square footage of all of the units within the shoreline jurisdiction, based upon the average unit size in the proposed on the subject property, is no greater than could be achieved under the maximum permitted density.
 - c. If a maximum density standard is used, the number of permitted dwelling units shall be rounded up to the next whole number (unit) if the fraction of the whole number is at least 0.66.
 - d. For detached dwelling units, the provisions addressing lot size, lot size averaging, and historic preservation contained in Chapter 22.28 KMC shall apply within the shoreline jurisdiction.
4. Shoreline Setback –
- a. General – This section establishes what structures, improvements, and activities may be in or take place in the shoreline setback established for each use in each shoreline environment.
 - b. Measurement of Shoreline Setback –
 - 1) The shoreline setback shall be measured landward from the ordinary high water mark on the horizontal plane and in the direction that results in the greatest dimension from the ordinary high water mark (see Plate XX).
 - 2) In those instances where the OHWM moved further upland in accordance with permits involving a shoreline habitat and natural systems enhancement project approved by the City or a state or federal agency, the shoreline setback shall be measured from the location of the ordinary high water mark that existed immediately prior to the enhancement project.
 - c. Exceptions and Limitations in Some Zones – KZC Sections 83.190 through 83.250 contain specific regulations regarding what may be in or take place in the shoreline setback. Where applicable, those specific regulations supersede the provisions of this section.
 - d. Structures and Improvements – The following improvements or structures may be located in the shoreline setback, provided that they are constructed and maintained in a manner that minimizes adverse impacts on shoreline functions and processes:
 - 1) Walkways, benches, and similar features, as determined by the Planning Official, which are part of the public pedestrian access required under KZC 83.370.
 - 2) Walkways within the shoreline setback that provide private access to the shoreline are permitted, subject to the following standards:
 - a) The maximum width of the walkway corridor may be no more than 25 percent of the property's lake frontage, except in no case is the corridor required to be less than 15 feet in width (see Plate XX).
 - b) The shoreline access shall be located to avoid areas of greater ecological and habitat value.

- c) The walkway shall be constructed of a permeable walking surface, such as unit pavers, grid systems, porous concrete, or equivalent material approved by the Planning Official.
 - d) The walkway corridor may contain minor improvements such as garden sculpture, light fixtures, trellises and similar decorative structures that are associated with the walkway, provided that these improvements comply with the dimensional limitations required for the walkways and any view corridor requirements under KZC Section 83.360. Light fixtures approved under this subsection shall comply with the provisions contained in KZC 83.240.
- 3) Those portions of water-dependent development that require improvements adjacent to the water's edge.
 - 4) Public access facilities or other similar public water-enjoyment recreational uses.
 - 5) Underground utilities accessory to a shoreline use approved by the Planning Official, provided there is no other feasible route or location.
 - 6) Bioretention swales, rain gardens, or other similar bioretention systems that allow for filtration of water through planted grasses or other native vegetation.
 - 7) Infiltration systems, provided that installation occurs as far as feasible from the ordinary high water mark.
 - 8) Bay windows, greenhouse windows, eaves, cornices, awnings, and canopies may extend up to 18 inches into the shoreline setback, subject to the limitations of this section. Eaves on bay windows may extend an additional 18 inches beyond the bay window. Chimneys that are designed to cantilever or otherwise overhang are permitted. The total horizontal dimension of the elements that extend into the shoreline setback, excluding eaves and cornices, may not exceed 25 percent of the length of the facade of the structure.
 - 9) Decks, patios and similar improvements may extend up to 5 feet into the shoreline setback, subject to the following standards:
 - a) The feature shall be constructed of a permeable surface, such as wood with gaps between boards and a pervious surface below, unit pavers, grid systems, porous concrete, or equivalent material approved by the Planning Official.
 - b) The total horizontal dimension of the elements that extend into the shoreline setback may not exceed 25 percent of the length of the facade of the structure.
 - c) The improvement may not extend more than 18 inches above finished grade.
 - 10) In the Urban Mixed shoreline environment, balconies at least 15 feet above finished grade may extend up to 4 feet into the shoreline setback.
 - 11) Bridges and other essential public facilities that must cross shorelines.
 - 12) Parking as authorized by the Planning Official under the provisions of KZC 83.400.3.
 - 13) Shoreline stabilization measures approved under the provisions of KZC 83.280.
5. Maximum Lot Coverage –
- a. General –
 - 1) The area of all structures and pavement and any other impervious surface on the subject property will be calculated as a percentage of the lot area located within the shoreline jurisdiction.

- 2) If the subject property contains more than one use, the maximum lot coverage requirements for the predominant use will apply.
 - 3) In those instances where the OHWM moved further upland in accordance with permits involving a shoreline habitat and natural systems enhancement project approved by the City, or a state or federal agency, the lot area for purposes of calculating lot coverage shall be measured from the location of the ordinary high water mark that existed immediately prior to the enhancement project.
- b. Exceptions – The exceptions contained in Chapter 115 KZC shall apply within the shoreline jurisdiction.
6. Height Regulations –
- a. General –
- 1) KZC 83.180.3, Development Standards Chart, establishes the maximum allowed building height for all primary and accessory structures.
 - 2) If the subject property contains more than one use contained within a building, the maximum height standard for the predominant use will apply to the building.
 - 3) Maximum building height shall be measured from an average building elevation (ABE), calculated under the methods described in KZC 115.59 and depicted in Plates 17A and 17B. In the CBD, maximum building height shall be measured from the midpoint of the abutting right-of-. For purposes of measuring building height, if the subject property abuts more than one right-of-way, the applicant may choose which right-of-way shall be used to measure the allowed height of structure, except that alleys shall be excluded.
 - 4) Pursuant to RCW 90.58.320, no permit may be issued for any new or expanded building or structure more than 35 feet above average grade level that will obstruct the view of a substantial number of residences on or adjoining the shoreline except where this Chapter does not prohibit a height of more than 35 feet and only when overriding considerations of the public interest will be served. The applicant shall be responsible for providing sufficient information to the City to determine whether such development will obstruct the view of a substantial number of residences on or adjoining such shorelines. For the purposes of this provision, average grade level is equivalent to and shall be calculated under the method for calculating average building elevation established in Option B as described in KZC 115.59 and depicted in Plate 17B.
- b. Exceptions –
- 1) No element or feature of a structure, other than the appurtenances listed below, may exceed the applicable height limitation established for each use in each shoreline environment. The following appurtenances shall be located and designed so that views from adjacent properties will not be significantly blocked.
 - a) Antennas, chimneys, and similar appurtenances, but not including personal wireless service facilities, which are subject to the provisions of Chapter [117](#) KZC.
 - b) Rooftop appurtenances and their screens.
 - c) Decorative parapets or peaked roofs approved through design review pursuant to Chapter [142](#) KZC, except that these height exceptions shall not result in a structure that exceeds 28 feet above the abutting right-of-way on the west side of Lake St S and north of 2nd Ave S.
- c. Permitted Increases in Height – The following permitted increases in height shall be reviewed by the City as part of the shoreline permit required for the proposed development activity.

- 1) The maximum structure height established in KZC 83.180.3, Development Standards Chart, may be increased in the following circumstances:
 - a) In the Natural shoreline environment, the structure height of a detached dwelling unit may exceed the standard height limit, when approved with a shoreline conditional use permit, by a maximum of 5 feet over average building elevation in order to reduce the footprint of the building which lessens the impact on a sensitive area and sensitive area buffer. The City shall include in the written decision any conditions and restrictions that the City determines are necessary to eliminate or minimize any undesirable effects of approving the exception.
 - b) In the Residential – M/H and Urban Conservancy shoreline environments located south of Market Street, the structure height of a commercial, recreational, institutional, utility or residential use, other than a detached dwelling unit, may be increased to 35 feet above average building elevation if:
 - i) Obstruction of views from existing development lying east of Lake St S or Lake Washington Boulevard is minimized. The applicant shall be responsible for providing sufficient information to the City to evaluate potential impacts to views; and either
 - ii) The increase is offset by a view corridor that is superior to that required by KZC Section 83.360; or
 - iii) The increase is offset by maintaining comparable portions of the structure lower than 30 feet above average building elevation.
 - c) In the Urban Mixed shoreline environment south of NE 52nd Street, the structure height of attached or stacked dwelling units or office use may be increased to 40 feet above average building elevation if:
 - i) Obstruction of views from existing development lying east of Lake Washington Boulevard is minimized. The applicant shall be responsible for providing sufficient information to the City to evaluate potential impacts to views; and
 - ii) Maximum lot coverage is 80 percent, but shall not include any structure allowed within the required front yard under the General Regulations in KZC 60.170; and
 - iii) Maximum building coverage is 50 percent, but shall not include any structure allowed within the required front yard under the General Regulations in KZC 60.170 or any structure below finished grade; and
 - iv) A waterfront area developed and open for public use shall be provided with the location and design specifically approved by the City. Public amenities shall be provided, such as non-motorized watercraft access or a public pier. A public use easement document shall be provided to the City for the public use area, in a form acceptable to the City. The City shall require signs designating the public use area; and
 - v) No rooftop appurtenances, including elevator shafts, roof decks or plantings, with the exception of ground cover material on the roof not to exceed four inches in height, shall be on the roof of the building or within the required view corridors.
 - d) Properties in the PLA 15A zone in the UM Shoreline Environment which contain mixed use development where building heights have been previously established under an approved Master Plan shall comply with the building height requirements as approved. Modifications to the approved building

heights shall be considered under the standards established in the Master and in consideration of the compatibility with adjacent uses and the degree to which public access, use and views are provided.

- e) In all shoreline environments, the maximum height may be increased up to 35 feet if the City approves a Planned Unit Development under the provisions of KZC Chapter 125.

General Use Standards

83.190 General Use Standards

1. Uses in the shoreline shall be designed, located, sized, and constructed to achieve no net loss of shoreline ecological functions. Where adverse impacts to ecological functions cannot be avoided, mitigation shall be provided to achieve no net loss of shoreline ecological functions. Failure to meet this standard may result in permit denial. The City may request necessary studies by qualified professionals to determine compliance with this standard.
2. All work at or waterward of the ordinary high water mark requires permits or approvals from one or more of the following state and federal agencies: U.S. Army Corps of Engineers, Washington Department of Fish and Wildlife, Washington Department of Natural Resources, or Washington Department of Ecology. Documentation verifying necessary state and federal agency approvals must be submitted to the City prior to issuance of a shoreline permit, including shoreline exemption. All activities within shoreline jurisdiction must comply with all other regulations as stipulated by State and Federal agencies, local Tribes, or others that have jurisdiction.
3. Uses in the shoreline shall be sited, designed, and configured in a manner that avoids the need for new shoreline stabilization or flood hazard reduction measures.
4. Uses in the shoreline shall be designed, located and managed to prevent significant adverse impacts on water quality, fish and wildlife habitat, and the environment.
5. Buildings located in the Urban Mixed Shoreline environment shall incorporate architectural features that reduce scale and apparent mass such as setbacks, pitched roofs, recesses, variety in materials, textures, pattern or color and other techniques and may be subject to the City's adopted Design Guidelines contained in Chapter 92 KZC.
6. Minimum required setbacks from shorelines, maximum height limits and lot coverage requirements are contained in KZC 83.180.
7. Special use standards are contained as notes to the Shoreline Environments, Permitted Uses and Activities Chart contained in KZC Section 83.170 as well as in the standards contained in KZC Section 83.190 through 83.270.
8. Harming, harassing, or otherwise endangering any native wildlife species within critical areas or shoreline setbacks, other than fishing under WDFW license or treaty, is prohibited, unless otherwise approved by the City.

Residential Development

83.200 Residential Development

1. General – No residential use may occur over water, including houseboats, live-aboards, or other single- or multi-family dwelling units.
2. Detached Dwelling Units - Not more than one dwelling unit may be on each lot, regardless of the size of each lot.

3. Accessory Structures or Uses - Accessory uses and structures shall be located landward of the principal residence, unless the structure is or supports a water-dependent use.

Commercial Uses

83.210 Commercial Uses

1. Float plane landing and mooring facilities –
 - a. Use of piers for commercial float plane service shall be allowed only in public or private marinas and shall be subject to a conditional use permit.
 - b. Any shoreline conditional use permit for float plane use shall specify:
 - 1) Taxiing patterns to be used by float planes that will minimize noise impacts on area residents and wildlife and minimize interference with navigation and moorage;
 - 2) Fuel spill and oil spill clean-up materials and firefighting equipment commensurate with the size of the facility and use by float planes; and
 - 3) The hours of operation. Hours of operation may be limited as necessary to limit impacts on area residents.
 - c. Float plane facilities and services shall conform to all applicable City codes and Federal Aviation Administration standards and requirements for fuel, oil spills, safety and firefighting equipment, noise, and pedestrian and swimming area separation.
2. Retail establishment providing new or used Boat Sales or Rental – Outdoor boat parking and storage areas must be buffered as required for a parking area under the provisions of KZC 83.400.
3. Retail establishment providing gas and oil sale for boats –
 - a. The location and design of fueling facilities must meet applicable state and federal regulations.
 - b. Storage of petroleum products shall not be located over water.
 - c. Storage tanks shall be located underground and shall comply with state and federal standards for Underground Storage Tanks.
 - d. Fueling stations shall be located and designed to allow for ease of containment and spill cleanup.
 - e. New fueling facilities shall incorporate the use of automatic shutoffs on fuel lines and at hose nozzles to reduce fuel loss.
 - f. Facilities, equipment and established procedures for the containment, recovery and mitigation of spilled petroleum products shall be provided.
4. Retail establishment providing boat and motor repair and service –
 - a. Storage of parts shall be conducted entirely within an enclosed structure.
 - b. If hull scraping, boat painting, or boat cleaning services are provided, boats shall be removed from the water and debris shall be captured and properly disposed of.
 - c. Repair and service activities shall be conducted on dry land and either totally within a building or totally sight screened from adjoining property and the right-of-way.
 - d. All dry land motor testing shall be conducted within a building.
 - e. An appropriate storage, transfer, containment, and disposal facility for liquid material, such as oil, harmful solvents, antifreeze, and paints shall be provided and maintained.

- f. Facilities, equipment and established procedures for the containment, recovery and mitigation of spilled petroleum or hazardous products shall be provided.
- 5. Restaurant or Tavern –
 - a. The design of the site must be compatible with the scenic nature of the waterfront. If the development will result in the isolation of a detached dwelling unit, site design, building design, and landscaping must mitigate the impacts of that isolation.
 - b. Drive-in or drive-through facilities are prohibited.

Industrial Uses

83.220 Industrial Uses

- 1. In addition to the perimeter buffering and fencing provisions established in KZC Chapter 95, the applicant shall screen all outdoor storage and activity areas from required public pedestrian pathways or public use areas with a minimum six-foot-high solid screening fence and perimeter buffer landscaping or other appropriate screening approved by the City.
- 2. Storage of industrial equipment or materials shall not be located within the shoreline setback.
- 3. Disposal or storage of solid or other industrial wastes is not permitted.
- 4. Hazardous materials or liquid materials shall be properly stored and contained in conformance with all applicable City, state and federal standards.

Recreational Uses

83.230 Recreational Development

- 1. Motorized Boats -
 - a. Power-operated boats and jet skis are prohibited within restricted areas designated in Juanita and Yarrow Bays, as delineated by buoys and signage.
 - b. Power-operated boats and jet skis on Lake Washington operated within 100 yards of the any shoreline, pier, restricted area or shore installation shall not exceed the speed limits established in KMC Chapter 14.24, Operation of Watercraft.
- 2. Marina – See standards contained in KZC Section 83.270.
- 3. Piers – See standards contained in KZC Section 83.270.
- 4. Boatlifts – See standards contained in KZC Section 83.270.
- 5. Canopies – See standards contained in KZC Section 83.270.
- 6. Tour Boat Facility – Tour Boat Facilities shall be designed to meet the following standards:
 - a. Size – The City will determine the maximum capacity of the tour boat facility based on the following factors:
 - 1) The suitability of the environmental conditions.
 - 2) The ability of the land landward of the high waterline to accommodate the necessary support facilities.

- b. Moorage structures supporting a tour boat facility shall comply with the moorage structure location standards and design standards for Marinas in KZC Section 83.270.
 - c. An on-site passenger loading area must be provided. The City shall determine the appropriate size of the loading area on a case-by-case basis, depending on the capacity of the tour boat and the extent of the abutting right-of-way improvements.
 - d. Buildings and structures which house passengers, employees and equipment storage shall not be permitted over water.
 - e. Tour boat facilities shall comply with applicable state and/or federal laws, including but not limited to those for registration, licensing of crew and safety regulations.
 - f. Tour boat facilities operated accessory to public parks shall comply with the standards in Chapter 14.36 KMC.
7. Moorage Buoy or Pilings – See standards contained in KZC Section 83.270.
8. Public Access Pier or Boardwalk –
- a. Public Access Piers or Boardwalks shall be designed to prevent significant impacts to sensitive natural systems and shall prevent the net loss of ecological functions.
 - b. No accessory uses, buildings, or activities are permitted as part of this use.
 - c. If a structure will extend waterward of the Inner Harbor Line, the applicant must obtain an aquatic use authorization from Washington State Department of Natural Resources prior to submittal of a building permit for this use.
 - d. Must provide at least one covered and secured waste receptacle upland of the ordinary high water mark.
 - e. All utility and service lines located waterward of the ordinary high water mark must be below the pier deck. All utility and service lines located upland of the ordinary high water mark shall be underground, where feasible.
 - f. Piers shall be marked with reflectors, or otherwise identified to prevent unnecessarily hazardous conditions for water surface users during the day or night.
 - g. Structures must display the street address of the subject property. The address must be oriented to the lake with letters and numbers at least four inches high and visible from the lake.
 - h. **[Placeholder for additional dimensional standards]**
9. Boat Launch (for non-motorized boats) –
- a. Location Standards – Boat launches for non-motorized boats shall be sited so that they do not significantly damage fish and wildlife habitats and shall not occur in areas with native emergent vegetation. Removal of native upland vegetation shall be minimized to the greatest extent feasible.
 - b. Size - The applicant shall demonstrate that the proposed size of the boat launch is the minimum necessary to safely launch the intended craft.
 - c. Design Standards – Boat launches for non-motorized boats shall be constructed of gravel or other similar natural material.
10. Boat Launch (for motorized boats) -
- a. Location Standards –
 - 1) Boat launches may not be approved in cases when it can be reasonably foreseeable that the development or use would require maintenance dredging during the life of the development or use.

- 2) Boat launches shall be designed and located according to the following criteria:
 - a) Boat launches shall be separated from existing swimming areas.
 - b) They shall not damage fish and wildlife habitats.
 - c) They shall be located only at sites with suitable transportation and access. The applicant must demonstrate that traffic generated by such a facility can be safely handled by the streets serving the boat launch.
 - 3) A boat launch may not be located within 25' of a moorage structure not on the subject property; or within 50' of the outlet of a stream, including piped streams.
 - b. Size - The applicant shall demonstrate that the proposed length of the ramp is the minimum necessary to safely launch the intended craft. In no case shall the ramp extend beyond the point where the water depth is six (6) feet below the OHWM.
 - c. Design Standards –
 - 1) Preferred ramp designs, in order of priority, are:
 - a) Open grid designs with minimum coverage of lake substrate.
 - b) Seasonal ramps that can be removed and stored upland.
 - c) Structures with segmented pads and flexible connections that leave space for natural beach substrate and can adapt to changes in shoreline profile.
 - 2) The design shall comply with all regulations as stipulated by State and Federal agencies, local Tribes, or others that have jurisdiction.
 - d. Boat launches shall provide trailer spaces, at least 10 feet by 40 feet, commensurate with projected demand.
11. Public Park - Recreation developments that support high-intensity activities as a primary use, such as sporting events, shall be located outside of shoreline jurisdiction to the extent feasible.
12. Public Access Facility -
- a. Fragile and unique shoreline areas with valuable ecological functions, such as wetlands and wildlife habitats, shall be used only for non-intensive recreation activities such as trails, viewpoints, interpretative signage and similar passive and low-impact facilities.
 - b. Physical public access shall be located and designed to prevent significant impacts to sensitive natural systems and the net loss of shoreline ecological functions.

Transportation Facilities

83.240 Transportation Facilities

- 1. General -
 - a. Transportation facilities shall utilize existing transportation corridors whenever possible; provided, that facility additions and modifications will not adversely impact shoreline resources and are otherwise consistent with this program. If expansion of the existing corridor will result in significant adverse impacts, then a less disruptive alternative shall be utilized.
 - b. When permitted within shoreline areas, transportation facilities must be placed and designed to minimize negative aesthetic impacts upon shoreline areas and to avoid and minimize impacts to existing land uses, public shoreline views, public access, and the natural environment.

- c. Transportation and utility facilities shall be required to make joint use of rights-of-way, and to consolidate crossings of water bodies to minimize adverse impacts to the shoreline.
 - d. Transportation facilities located in shoreline areas must be designed and maintained to prevent erosion and to permit the natural movement of surface water.
2. Construction and Maintenance –
- a. All debris and other waste materials from roadway construction and maintenance shall be disposed of in such a way as to prevent their entry into any water body.
 - b. All shoreline areas disturbed by facility construction and maintenance shall be replanted and stabilized with approved vegetation by seeding, mulching, or other effective means immediately upon completion of the construction or maintenance activity. Such vegetation shall be maintained until established.
 - c. Clearing of vegetation within transportation corridors shall be the minimum necessary for infrastructure maintenance and public safety. The City shall give preference to mechanical means rather than the use of herbicides for roadside brush control on city roads in shoreline jurisdiction.
 - d. Maintenance activities shall be conducted in a manner that minimizes impacts to fish, wildlife, and their associated habitat and utilizes best management practices.
3. Bridges –
- a. Bridges shall meet the standards for arterials, collectors, and neighborhood access streets in subsection 6 below.
4. Passenger-only Ferry Terminal –
- a. Ferry terminals and their related parking areas shall be located, designed, constructed and operated to minimize their impacts on shoreline natural resources and systems.
 - b. Buildings and structures that house pedestrian passengers, employees and equipment storage shall not be permitted over water.
 - c. Equipment storage shall be conducted entirely within an enclosed structure.
 - d. Facilities, equipment and established procedures for the containment, recovery and mitigation of spilled petroleum or hazardous products shall be provided.
 - e. Ferry terminals shall provide parking commensurate with projected demand. The Planning Official may permit the parking to be located off-site if the applicant demonstrates on submitted plans and/or in writing that the following criteria have been met:
 - 1) It is reasonable to expect that the proposed parking area will be used by the subject use.
 - 2) A safe pedestrian and/or shuttle connection exists, or will be created, between the subject use and the proposed parking area.
 - 3) Where the lot is not owned by the same person who owns the lot containing the ferry terminal, the owner of the lot containing the parking must sign a statement in a form acceptable to the City Attorney, stating that the lot is devoted in whole or in part to required parking for the ferry terminal. The applicant must file this statement with the King County Bureau of Elections and Records to run with the property.

- f. An on-site passenger loading area must be provided. The City shall determine the appropriate size of the loading area on a case-by-case basis, depending on the capacity of the ferry and the extent of the abutting right-of-way improvements.
5. Water Taxi –
- a. Water-taxis shall be located, designed, constructed, and operated to minimize their impacts on shoreline natural resources and systems.
 - b. Equipment storage shall be conducted entirely within an enclosed structure.
 - c. Facilities, equipment and established procedures for the containment, recovery and mitigation of spilled petroleum or hazardous products shall be provided.
6. Arterials, Collectors, and Neighborhood Access Streets –
- a. New street and bridge construction in shoreline jurisdiction shall be minimized and allowed only when related to and necessary for the support of permitted shoreline activities.
 - b. Streets other than those providing access to approved shoreline uses shall be located away from the shoreline, except when no reasonable alternate location exists.
 - c. Any street expansion affecting streams and waterways shall be designed to allow fish passage and minimum impact to habitat.
 - d. Drainage and surface runoff from streets and street construction or maintenance areas shall be controlled so that pollutants will not be carried into water bodies.
 - e. Streets within shoreline jurisdiction shall be designed with the minimum pavement area feasible.
 - f. Streets shall be designed to provide frequent safe crossings for pedestrians and bicycles seeking access to public portions of the shoreline.
 - g. Low impact development techniques shall be used where feasible for roadway or pathway and related drainage system construction.
 - h. Street alignments shall be designed to fit the topography so that alterations of the natural site conditions will be minimized.
 - i. New and expanded streets or bridges shall be designed to include pedestrian amenities such as benches or view stations and public sign systems if an area is available for the improvement, that identify significant features along the shoreline.
 - j. Landscaping and street trees shall be selected and located so that they do not impair public views of the lake from public rights of way to the maximum extent possible.
 - k. Shoreline street ends may be used for public access or recreational purposes.
 - l. Shoreline street ends may not be vacated except in compliance with RCW 35.79.035 or its successor, as well as KMC 19.16.090.

Utilities

83.250 Utilities

1. General –
- a. Whenever feasible, utility facilities shall be located outside the shorelines area. Whenever these facilities must be placed in a shoreline area, the location shall be chosen so as not to adversely impact shoreline ecological functions or obstruct scenic views.

- b. Utilities shall be located in existing rights-of-way and utility corridors wherever feasible.
 - c. New utilities may not be located waterward or the ordinary high water mark or in the Natural shoreline environment unless it is demonstrated that no feasible alternative exists
 - d. Utility lines, pipes, conduits, cables, meters, vaults, and similar infrastructure and appurtenances shall be placed underground consistent with the standards of the serving utility to the maximum extent feasible.
 - e. Proposals for new utilities or new utility corridors in the shoreline jurisdiction must fully substantiate the infeasibility of existing routes or alternative locations outside of the shoreline jurisdiction. Proposals for new water crossings must fully substantiate the infeasibility of existing routes or alternative locations.
 - f. Utilities which are accessory and incidental to a shoreline use shall be reviewed under the provisions of the use to which they are accessory.
 - g. Utilities shall provide screening of facilities from water bodies and adjacent properties in a manner that is compatible with the surrounding environment. Type of screening required shall be determined by the City on a case-by-case basis.
 - h. Utility development shall, through coordination with local government agencies, provide for compatible, multiple use of sites and rights-of-way. Such uses include shoreline access points, trail systems and other forms of recreation and transportation, providing such uses will not unduly interfere with utility operations, or endanger public health and safety.
 - i. Property owners possessing legal rights to water in the Lake shall be allowed to retain those water-intake valves or structures existing on the date of adoption of this Master Program which are necessary to maintain those rights.
2. Construction and Maintenance –
- a. All shoreline areas disturbed by utility construction and maintenance shall be replanted and stabilized with approved vegetation by seeding, mulching, or other effective means immediately upon completion of the construction or maintenance activity. Such vegetation shall be maintained until established.
 - b. Clearing of vegetation within utility corridors shall be the minimum necessary for installation, infrastructure maintenance and public safety.
 - c. Maintenance activities shall be conducted in a manner that minimizes impacts to fish, wildlife, and their associated habitat and utilizes best management practices.
3. Utility production and processing facilities - Utility production and processing facilities not dependent on a shoreline location shall be located outside of the shoreline jurisdiction, unless it is demonstrated that no feasible alternative location exists.
4. Utility Transmission Facilities –
- a. Transmission facilities shall be located outside the shoreline jurisdiction where feasible, and when necessarily located within shoreline areas, shall assure no net loss of shoreline ecological functions.
 - b. Pipelines transporting hazardous substances or other substances harmful to aquatic life or water quality are prohibited, unless it is demonstrated that no feasible alternative exists.
 - c. Sanitary sewers shall be separated from storm sewers.

5. Personal Wireless Service Facilities – Personal Wireless Service Facilities shall use concealment strategies to minimize the appearance of antennas and equipment from the lake and public pedestrian pathways or public use areas.

Existing Zoning Code Bulk and Dimensional Standards

Shoreline Environment	Zoning District	High Waterline Yard	Lot Coverage	Height	Minimum Lot Size
Urban Mixed	PR 3.6	Not applicable	70%	If adjoining a low density zone other than RSX, then 25' above average building elevation. Otherwise, 30' above average building elevation.	3,600 sq. ft./unit
	JBD 2	Not applicable	80%	26' to 39' if 30% view corridor provided	None
	JBD 3	Not applicable	80%	26' to 39' if 30% view corridor provided	3,600 sq. ft., with 2,400 sq. ft./unit
	JBD 4	?	80%	26' to 39' if 30% view corridor provided	3,600 sq. ft., with 1,800 sq. ft./unit
	JBD5	15' or 15% of average parcel depth, whichever is greater	80%	26'	3,600 sq. ft., with 1,800 sq. ft./unit
	CBD 1	Not applicable	100%	2-5 stories for Hotel/Motel, Stacked and Attached Dwelling Unit, and Assisted Living; otherwise 2-4 stories	None
	CBD 2	?	100%	2 stories ¹	None
	BN	Not applicable	80%	If adjoining a low density zone other than RSX, then 25' above	None

¹ Along Lake Street South, north of Kirkland Avenue, buildings exceeding one story above Lake Street South shall demonstrate compliance with the Design Regulations of Chapter 92 KZC and all provisions of the Downtown Plan. Through Design Review (D.R.) the City shall find that any allowance for additional height is clearly outweighed by identified public benefits such as through-block public pedestrian access or through-block view corridors. In no case shall the height exceptions identified in KZC 50.62 and 115.60(2)(d) result in a structure which exceeds 28 feet above the abutting right-of-way South of Second Avenue South, maximum height of structure is three stories above Lake Street South as measured at the midpoint of the frontage of the subject property on Lake Street South. Buildings exceeding two stories shall demonstrate compliance with the design regulations of Chapter 92 KZC and all provisions of the Downtown Plan

Shoreline Environment	Zoning District	High Waterline Yard	Lot Coverage	Height	Minimum Lot Size
				average building elevation. Otherwise, 30' above average building elevation.	
	PLA 15A	15' or 15% of average parcel depth, whichever is greater	80%	30' for detached dwelling unit; 30-40' for office and attached or stacked dwelling units ² ; case-by-case for mixed use	5,000 for detached dwelling unit; 3,600 sq. ft./unit for attached and stacked du; Lot area/3,100 square feet for mixed use
	P			Case-by-Case	
Urban Residential	RM 1.8	15' or 15% of average parcel depth, whichever is greater	60 – 70% (depending on use)	If adjoining a low density zone other than RSX, then 25' above average building elevation. Otherwise, 30' above average building elevation.	3,600 sq. ft., with 1,800 sq. ft./unit
	RM 3.6	Not applicable	60 – 70% (depending on use)	If adjoining a low density zone other than RSX, then 25' above average building elevation.	3,600 sq. ft./unit

² Structure height may be increased to 40 feet above average building elevation if:

- a. Obstruction of views from existing development lying east of Lake Washington Boulevard is minimized; and
- b. Maximum lot coverage is 80 percent, but shall not include any structure allowed within the required front yard under the General Regulations in KZC 60.170; and
- c. Maximum building coverage is 50 percent, but shall not include any structure allowed within the required front yard under the General Regulations in KZC 60.170 or any structure below finished grade; and
- d. A waterfront area developed and open for public use shall be provided with the location and design specifically approved by the City. Public amenities shall be provided, such as non-motorized watercraft access or a public pier. A public use easement document shall be provided to the City for the public use area, in a form acceptable to the City. The City shall require signs designating the public use area; and
- e. The required public pedestrian access trail from Lake Washington Boulevard to the shoreline shall have a trail width of at least six feet and shall have a grade separation from the access driveway; and
- f. No roof top appurtenances, including elevator shafts, roof decks or plantings, with the exception of ground cover material on the roof not to exceed four inches in height, shall be on the roof of the building or within the required view corridors.

Shoreline Environment	Zoning District	High Waterline Yard	Lot Coverage	Height	Minimum Lot Size
				Otherwise, 30' above average building elevation.	
	WD I	15' or 15% of average parcel depth, whichever is greater ³	80%	30' for detached dwelling unit; otherwise 30-35' ³	3,600 sq. ft./unit
	WD III	15' or 15% of average parcel depth, whichever is greater	80%	30' for detached dwelling unit; otherwise 30-35' ⁴	3,600 sq. ft./unit
	PLA 6A	Not applicable	60 – 70% (depending on use)	If adjoining a low density zone other than RSX, then 25' above average building elevation. Otherwise, 30' above average building elevation.	3,600 sq. ft., with 1,800 sq. ft./unit
	PLA 6I	Not applicable	60 – 70% (depending on use)	30'	3,600 sq. ft., with 2,400 sq. ft./unit
	PLA 6H	Not applicable	60 – 70% (depending on use)	25'	5,000 square feet for detached dwelling unit; 2 acres with 3,600 sq. ft./unit
	PLA 3B	15' or 15% of	80%	30' for detached dwelling unit;	3,600 sq. ft./unit

³ Structure height may be increased to 35 feet above average building elevation if the increase does not impair views of the lake from properties east of Lake Washington Boulevard; and

a. The increase is offset by a view corridor that is superior to that required by the General Regulations; or

b. The increase is offset by maintaining comparable portions of the structure lower than 30 feet above average building elevation.

⁴ Structure height may be increased to 35 feet above average building elevation if the increase does not impair views of the lake from properties east of Lake Washington Boulevard; and

a. The increase is offset by a view corridor that is superior to that required by the General Regulations; or

b. The increase is offset by maintaining comparable portions of the structure lower than 30 feet above average building elevation.

Shoreline Environment	Zoning District	High Waterline Yard	Lot Coverage	Height	Minimum Lot Size
Low Density Residential		average parcel depth, whichever is greater		otherwise 30-35' ⁵	
	WD II	15', 15% of average parcel depth, or average of adjoining lots, whichever is greater	50%	25'	12,500 sq. ft.
	RS 5.0	Not applicable	50%	25'	5,000 sq. ft.
Urban Conservancy	RS 12.5	Not applicable	50%	25'	12,500 sq. ft.
	P			Case-by-Case	
	RM 1.8	15' or 15% of average parcel depth, whichever is greater	60 – 70% (depending on use)	If adjoining a low density zone other than RSX, then 25' above average building elevation. Otherwise, 30' above average building elevation.	3,600 sq. ft., with 1,800 sq. ft./unit
Natural	P			Case-by-Case	
	PLA 3A				
	PLA 2				
	RS 12.5	Not applicable	50%	25'	12,500 sq. ft.

⁵ Structure height may be increased to 35 feet above average building elevation if the increase does not impair views of the lake from properties east of Lake Washington Boulevard; and
a. The increase is offset by a view corridor that is superior to that required by the General Regulations; or
b. The increase is offset by maintaining comparable portions of the structure lower than 30 feet above average building elevation.

Existing SMP Bulk and Dimensional Standards

Shoreline Environment	Existing SED	High Waterline Yard	Lot Coverage	Height	Minimum Lot Size
Urban Mixed	Urban Mixed 1	15' or 15% of average parcel depth, whichever is greater ⁶	N/A	35' above average grade level for detached dwelling unit; otherwise 41' above average grade level	3,600 sq. ft. for detached dwelling unit; 7,200 sq. ft., with 1,800 sq. ft./unit
	Urban Mixed 2	15' or 15% of average parcel depth, whichever is greater; or for mixed-use developments determined on a case-by-case basis based on the compatibility of the development with adjacent uses and the degree to which public access, use and views are provided.	N/A	35' above average grade level for detached dwelling unit; 30-35' for attached/stacked dwelling units ⁷ ; or for mixed-use developments determined on a case-by-case basis based on the compatibility of the development with adjacent uses and the degree to which public access, use and views are provided.	3,600 sq. ft for detached dwelling unit; 7,200 sq. ft., with 3,600 sq. ft./unit
Urban Residential	Urban Residential 1	15' or 15% of average parcel depth, whichever is greater	N/A	35' above average grade level for detached dwelling unit; otherwise 30-35' ⁸	3,600 sq. ft for detached dwelling unit; 3,600 sq. ft., with 3,600 sq. ft./unit

⁶ For attached or stacked dwelling units, balconies at least 15' above finished grade may extend up to 4' into the high waterline yard

⁷ Height may be increased from 30 to 35' if the increase does not impair the views of the lake from properties east of Lake St S or Lake Washington Blvd.

⁸ Height may be increased from 30 to 35' if the increase does not impair the views of the lake from properties east of Lake St S or Lake Washington Blvd.

Shoreline Environment	Existing SED	High Waterline Yard	Lot Coverage	Height	Minimum Lot Size
	Urban Residential 2	15' or 15% of average parcel depth, whichever is greater	N/A	35' above average grade level for detached dwelling unit; 30-35' for attached/stacked dwelling units ⁹	3,600 sq. ft. for detached dwelling unit; 3,600 sq. ft., with 3,600 sq. ft./unit
Low Density Residential	Suburban Residential	15', 15% of average parcel depth, or average of adjoining lots, whichever is greater	N/A	25' above average grade level	12,500 sq. ft.
Urban Conservancy	Suburban Residential; Urban Residential 1 and Urban Mixed 1	Case-by-case	Case-by-case	Public parks in SR – structures may not exceed a height of 25' above average grade level Public parks in UM 1 – structures shall not exceed a height of 41' above average parcel grade level Otherwise, 35' above average parcel grade level	Case-by-case
Natural	Conservancy 1	15' or 15% of average parcel depth, whichever is greater	N/A	25' above average grade level	35,000 sq. ft. per unit
	Conservancy 2	100' and 50' from the canal	N/A	35' above average grade level for detached dwelling unit; 25' above average grade level for attached/stacked	35,000 sq. ft. per unit

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⁹ Height may be increased from 30 to 35' if the increase does not impair the views of the lake from properties east of Lake St S or Lake Washington Blvd.

Shoreline Modification Regulations

- 83.270 General
- 83.280 Piers, Docks, Floats and Boatlifts
- 83.290 Marinas
- 83.300 Shoreline stabilization
- 83.310 Breakwaters, jetties, rock weirs, groins
- 83.320 Dredging and dredge material disposal
- 83.330 Land Surface Modification
- 83.340 Landfill
- 83.350 Shoreline habitat and natural systems enhancement projects

83.270 General

1. Shoreline modifications are to be designed, located, sized, and constructed such that the structures or measures do not result in a net loss of shoreline ecological functions. Where adverse impacts to ecological functions cannot be avoided, mitigation shall be provided to achieve no net loss of shoreline ecological functions.
2. All work at or waterward of the ordinary high water mark requires permits or approvals from one or more of the following state and federal agencies: U.S. Army Corps of Engineers, Washington Department of Fish and Wildlife, Washington Department of Natural Resources, or Washington Department of Ecology. Documentation verifying necessary state and federal agency approvals must be submitted to the City prior to issuance of a shoreline permit, including shoreline exemption. All activities within shoreline jurisdiction must comply with all other regulations as stipulated by state and federal agencies, local tribes, or others that have jurisdiction.

83.280 Piers, Docks, Floats and Boatlifts

[Placeholder]

83.290 Marinas

[Placeholder]

83.300 Shoreline Stabilization

[Placeholder]

83.310 Breakwaters, Jetties, Groins

1. Breakwaters, jetties, and groins are not permitted in the Natural, Urban Conservancy, or Residential – L shoreline environments. Breakwaters, jetties, and groins may only be permitted in other shoreline environments where necessary to support water-dependent uses, public access, shoreline stabilization, or other specific public purpose.
2. The City will permit the construction and use of a breakwater, jetty or groin only if:
 - a. The structure is essential to the safe operation of a moorage facility or the maintenance or other public water-dependent uses, such as swimming beaches;
 - b. The City determines that the location, size, design, and accessory components of the moorage facility or other public water-dependent uses to be protected by the breakwater are distinctly desirable and within the public interest; and

- c. Any undesirable effects or adverse impacts upon the environment or upon nearby waterfront properties from the structure are clearly outweighed by the benefits to the public provided by the moorage facility or other public water-dependent uses to be protected by the breakwater.
3. Design Standards
 - a. All breakwaters, jetties or groins must be designed and constructed under the supervision of a civil engineer or similarly qualified professional. As part of the application, the engineer or other professional designing the breakwater, jetty or groin must certify that it is the smallest possible structure to meet the requirements of this chapter and accomplish the project's purpose. Also to be certified is that the design will result in the minimum possible adverse impacts upon shoreline ecological functions, nearby waterfront properties and navigation.
 - b. Breakwaters may only use floating or open-pile designs.

83.320 Dredging and Dredge Material Disposal

1. New development shall be sited and designed to avoid or, if that is not possible, to minimize the need for new and maintenance dredging.
2. Dredging and dredge material disposal waterward of the ordinary high water mark may be allowed for the following purposes and under the following circumstances:
 - a. To establish, expand, relocate or reconfigure navigation channels and basins where necessary for assuring safe and efficient accommodation of existing navigational uses and then only when significant ecological impacts are minimized and when mitigation is provided. Maintenance dredging of established navigation channels and basins shall be restricted to maintaining previously dredged and/or existing authorized location, depth, and width.
 - b. To maintain the use of existing private or public boat moorage, water-dependent use, or other public access use. Maintenance dredging is restricted to maintaining previously dredged and/or existing authorized location, depth, and width.
 - c. To restore ecological functions, provided the applicant can demonstrate a clear connection between the proposed dredging and the expected environmental benefits to water quality and/or fish and wildlife habitat.
 - d. To obtain fill or construction material when necessary for the restoration of ecological functions. Dredging waterward of the ordinary high water mark for the primary purpose of obtaining fill or construction materials is not permitted under other circumstances. When allowed, the site where the fill is to be placed must be located waterward of the ordinary high water mark. The project must be associated with a significant habitat enhancement project.
 - e. Depositing dredge materials waterward of the ordinary high water mark may be allowed only in approved sites, only when the material meets or exceeds pollutant standards, and only for one (1) or more of the following reasons:
 - 1) For fish or wildlife habitat improvement, or
 - 2) For permitted beach enhancement.
3. Dredging Design Standards –
 - a. All permitted dredging must be the minimum area and volume necessary to accommodate the existing or proposed use, and must be implemented using practices that do not exceed State water quality standards.

- b. Dredging projects shall be designed and carried out to prevent direct and indirect impacts on adjacent properties.
- 5. Submittal Requirements - In addition to the minimum application requirements, the following information shall be required for all dredging applications:
 - a. A description of the purpose of the proposed dredging.
 - b. A detailed description of the existing physical character, shoreline geomorphology and biological resources provided by the area proposed to be dredged, including:
 - 1) A site plan map outlining the perimeter of the proposed dredge area. The map must also include the existing bathymetry depths based on the ordinary high water mark and have data points at a minimum of 2-foot depth increments.
 - 2) A habitat survey must be conducted to identify aquatic vegetation, potential native fish spawning areas, or other physical or biological habitat parameters.
 - 3) Information on stability of lakebed adjacent to proposed dredging area.
 - c. A detailed description of the physical, chemical and biological characteristics of the dredge spoils to be removed.
 - 1) Physical analysis of material to be dredged: material composition and amount, grain size, organic materials present, source of material, etc.
 - 2) For projects exceeding 1,000 cubic yards or projects in areas that the City has reason to believe may contain higher levels of chemical contaminants, the following may be required:
 - 1. Chemical analysis of material to be dredged: including metals, organics, hydrocarbons, pesticides, etc.
 - 2. Biological analysis of material to be dredged.
 - d. A description of the method of materials removal, including facilities for settlement and movement.
 - 1) Dredging procedure: length of time it will take to complete dredging, method of dredging, and amount of material removed.
 - 2) Frequency and quantity of project maintenance dredging.
 - e. Detailed plans for dredge spoil disposal, including, but not limited to:
 - 1) Specific approved land or open-water disposal site.
 - 2) Total initial spoils volume.
 - 3) Plan for anticipated future maintenance dredging and disposal for at least a fifty (50)-year period.

83.330 Land Surface Modification

- 1. General – The following standards must be met for any approved land surface modification:
 - a. The land surface modification shall be consistent with the provisions of this Chapter, including, but not limited to, the regulations regarding streams, wetlands and their buffers, geologically hazardous areas, shoreline vegetation, and trees.
 - b. The land surface modification is consistent with the provisions of the most current edition of the Public Works Department's Pre-Approved Plans and Policies.
 - c. All excess material resulting from land surface modification shall be disposed of in a manner that prevents the material entering into a waterbody through erosion or runoff.

Where large quantities of plants are removed by vegetation control activities authorized under this section, plant debris shall be collected and disposed of in an appropriate location located outside of the shoreline setback.

- d. Areas disturbed by permitted land surface modification in the shoreline setback shall be stabilized with approved vegetation.
 - e. All materials used as fill shall be non-dissolving and non-decomposing. Fill material shall not contain organic or inorganic material that would be detrimental to water quality or existing habitat, or create any other significant adverse impacts to the environment.
2. Permitted Activities -
- a. Land surface modification is prohibited within the shoreline setback, except for the following:
 - 1) Land surface modification for the purpose of shoreline habitat and natural systems enhancement projects, setting back bulkheads or portions of bulkheads from the ordinary high water mark, or soft shoreline stabilization measures under a plan approved by the City.
 - 2) Land surface modification authorized by a valid shoreline permit.
 - 3) Except as is necessary during construction, dirt, rocks and similar materials may not be stockpiled on the subject property. If stockpiling is necessary during construction, it must be located as far as possible from the lake and strictly contained to prevent erosion and runoff.
 - 4) Land surface modification associated with the installation of improvements located within the shoreline setback or waterward of the ordinary high water mark, as permitted under KZC Section 83.180.4.d.
 - 5) Removal of prohibited vegetation.
 - 6) Land surface modification performed in the normal course of maintaining existing landscaping on a lot associated with an existing building or buildings, provided such work:
 - a) Does not modify any drainage course.
 - b) Does not involve the importation of fill material, except as needed for mulch or soil amendment.
 - c) Does not include tree trimming, tree topping, tree cutting or tree removal, unless the City approves a tree removal under KZC Section 83.370.
 - d) Does not involve removal of native vegetation or vegetation installed as part of an approved restoration or enhancement plan, unless approved by the Planning Official.
 - e) Does not result in erosion of the shoreline or undermine stability of neighboring properties.
 - f) Does not result in the compaction of existing soils in a manner that significantly decreases the ability of the soil to absorb rainfall.
 - g) Is the minimum extent necessary to reasonably accomplish the maintenance activity.
 - 6) Correction of storm drainage improvements when supervised by the Department of Public Works.
 - 7) Land surface modification that is necessary to maintain or upgrade the structural

safety of an existing structure.

- 8) Exploratory excavations under the direction of a professional engineer licensed in the state of Washington, as long as the extent of the land surface modification does not exceed the minimum necessary to obtain the desired information.
- b. Land surface modification outside of the shoreline setback is regulated as land surface modifications throughout the City. See KMC Title 29 for those regulations.

83.340 Fill

1. Fill shall be permitted only where it is demonstrated that the proposed action will not:
 - a. Result in significant damage to water quality, fish, aquatic habitat, and/or wildlife habitat; or
 - b. Adversely alter natural drainage and circulation patterns, currents, or stream flows, or significantly reduce flood water holding capabilities.
2. Fills landward and waterward of the ordinary high water mark shall be designed, constructed, and maintained to prevent, minimize, and control all material movement, erosion, and sedimentation from the affected area.
3. Fills waterward of the OHWM shall be permitted only:
 - a. In conjunction with an approved water-dependent or public access use, including maintenance of beaches;
 - b. In conjunction with the expansion or alteration of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible;
 - c. As part of an approved mitigation or restoration project.
4. Any placement of materials landward of the ordinary high water mark shall comply with the provisions in KZC 83.330 for land surface modification.
5. No refuse disposal sites, solid waste disposal sites, or sanitary fills shall be permitted.

83.350 Shoreline Habitat and Natural Systems Enhancement Projects

1. Purpose - Shoreline habitat and natural systems enhancement projects include those activities proposed and conducted specifically for the purpose of establishing, restoring, or enhancing habitat for priority species in shorelines.
2. Covered Activities – The following actions are allowed under this section, provided they first meet the purpose stated in subsection 1. above:
 - a. Establishment or enhancement of native vegetation.
 - b. Removal of non-native or invasive plants upland of the ordinary high water mark, including only those identified as noxious weeds on King County's published Noxious Weed List, unless otherwise authorized by the City.
 - c. Conversion of hard structural shoreline stabilization to soft shoreline stabilization, including associated clearing, dredging and filling necessary to implement the conversion, provided that the primary purpose of such actions is clearly restoration of the natural character and ecological functions of the shoreline.
 - d. Implementation of any project or activity identified in the Restoration Plan, as adopted by the City Council on XX, under Ordinance XX.
 - e. Implementation of any project or activity identified in the *Final WRIA 8 Chinook Salmon Conservation Plan* and related documents.



November 17, 2008

From: David Douglas, Waterfront Construction, Inc.
To: Stacy Clauson, City of Kirkland
Teresa Swan, City of Kirkland
Paul Stewart, City of Kirkland

Dear City of Kirkland SMP Update Staff,

I have reviewed the latest packet of documents for the SMP Update and provide the following comments and questions.

- 1) Page 1 of 11 (bottom)
Following review of the new State Guidelines the City has determined that the current SMP is not consistent with many key requirements of the new guidelines. **Please list each of these key requirements you have identified in detail and why the current Kirkland SMP does not meet the new guidelines.**

- 2) Page 3 of 11 (top)
Please explain why the replacement of existing shoreline stabilization measures are treated as new and what statute in the state guidelines is being used to require a geotechnical report to justify a new or replacement bulkhead even when it is built in a way that will result in “no net loss of shoreline ecological functions”?

- 3) Page 3 of 11 (middle)
State and federal regulatory agencies already require extensive native planting plans for shoreline projects and their reviewers are habitat biologists who specialize in the marine environment and the protection of listed species and critical habitat.

Why does this need to be addressed by local government simply to meet a state guideline and why doesn't the state defer to more experienced regulatory agency biological staff rather than promoting redundancy? Can the City accept native planting plans approved by WDFW and/or the Corps of Engineers for projects where such is required? This can be verified during the building permit application when projects are back routed to the Planning Department for verification of Shoreline and SEPA compliance.

Seattle Office
Waterfront Construction, Inc.
205 NE Northlake Way, Suite 230, Seattle, WA 98105
P: (206) 548-9800 F: (206) 548-1022

Everett Office
Waterfront Construction, Inc.
10315 19th Avenue SE, Suite 106, Everett, WA 98208
P: (425) 357-0312 F: (425) 357-0320

- 4) Page 3 of 11 (middle)
Why do specific dimensional standards need to be implemented for piers and docks when existing local, state and federal regulatory reviews, which are required for all projects, are currently effective? The City of Kirkland has a more effective and thorough shoreline review than most other jurisdictions and a fair evaluation of new projects approved by the City will show that the tri-level (local, state and federal) process has worked to control size and environmentally friendly design. DOE has recognized that an alternative process can be used for redevelopment of both piers and bulkheads by using proposed versus existing site conditions. Nearly every redevelopment project completed over the last 5+ years would render a “no net loss” determination and in most cases they would fall under the classifications of “net gain” or “restoration”. **This being the case, why is the City considering implementing specific dimensional standards on piers and docks? It is requested the City stand firm against this requirement and reject use of the Corp RGP-3 Guidelines for docks and piers.** The RGP-3 is a very flexible document that can be used as a Reference Biological Evaluation when a pier exceeds the guidelines and **less than 5% of projects approved by the Corps since March 2005 when the RGP-3 was implemented have met the dimensional guidelines.** If made a part of the SMP it could push most projects into a more expensive, drawn out, labor intensive, and rarely approved Shoreline Variance process where DOE will decide a property owner’s future.
- 5) Page 3 of 11 (middle)
As explained above, nearly all redevelopment projects under current review, whether bulkhead or pier replacement, easily meet the “no net loss”. The City should increase its inventory of the shoreline to include waterfront properties where native vegetation currently exists. **Nearly every new project built over the last 5+ years has included native vegetation and the City may not be aware of this fact. The City should consider inventorying the overwater coverage from existing public and private piers, both total coverage and that 30’ closest to the shoreline to serve as a baseline.** By doing so and comparing it to any historical data the City may have from 10 or 20 years ago, it will discover that each redevelopment project results in a substantial decrease of overwater coverage in the most critical nearshore area and may also show a decrease in total overwater coverage. I am hesitant to declare a decrease in total overwater coverage since longer piers are desired by agencies so aquatic activity, boatlifts and moorage covers are further from the most critical nearshore area where migration and most spawning takes place. Wider pier sections in deeper water have less impact so allowing a wider section of pier in deeper water can serve as an incentive to removing existing platforms currently close to the shoreline. **If the City or state has failed to collect historical documented or photo data for comparison then overly restrictive standards should not be placed on property owners as a result. Environmentally friendly pier and bulkhead design did not come about because of the SMP Updates but have evolved over the past several years through a combination of factors including state and federal guidelines and voluntary design and construction changes initiated by marine contractors and property owners. The SMP Updates are taking place in the midst of these changes and are trying to fix something that isn’t broken at the cost of property owners.** State and local governments, along with the biological consultants they have hired, have refused up to this point to recognize and factor in this natural progression of positive changes along the state’s shorelines, especially for Lake Washington and Lake Sammamish. These

improvements must be recognized if the update process is to be considered transparent, equitable and fairly represent recent trends and existing conditions.

- 6) Page 3 of 11 (bottom)
It appears the City may require private and/or public restoration to compensate for the impacts to shoreline ecological functions resulting from new development that is presumed to cause impacts. **Please explain if it is the intent of the City to tie totally unrelated private or public projects to new developments in other areas and require not only “no net loss” but a “restoration” element. If this is not the intent of the City please explain this section under the “no net loss” section.**
- 7) Page 4 of 11 (bottom)
The letter from DOE clears up a lot of issues and essentially supports many of the concerns voiced by Kirkland and other community waterfront property owners. **Is the City carefully reviewing and weighing contents of this letter and does the City intend to incorporate the DOE clarification in the City’s SMP?**
- 8) Page 4 of 11 (bottom)
The Corps document is a Programmatic Biological Evaluation (PBE) and not a Regional General Permit (RGP) as listed. Similar to other related activities covered under PBE’s this simply allows the type of work to be done without submitting an Individual Biological Evaluation and needing to receive concurrence from the federal services (NOAA and USFWS). It is not the only way to have a bulkhead permitted and like the RGP, there are other permit processes that can be used. **Just like the RGP-3 for docks, this supports why a federal process designed to arrive at a different determination (“Not Likely to Adversely Affect Listed Species or Critical Habitat” vs “No Net Loss of Shoreline Ecological Functions”) should not be used as a basis for standards contained within a SMP where they become inflexible laws. This is most crucial in the case of redevelopment of existing structures.**
- 9) Page 5 of 11(middle)
The statement that “the City, in many cases, is not imposing new requirements that would not otherwise need to be met or require significant additional cost and permitting time for property owners to identify alternatives” is simply untrue. WDFW and the Corps of Engineers have limited authority that begins at or below the Ordinary High Water Line in fresh water lakes while the City and DOE have authority extending from the shoreline 200 feet landward. In many cases a project can be built immediately behind an existing bulkhead and it is out of Corps authority. **WDFW and the Army Corps do not request geotechnical reports or studies and have rarely denied a bulkhead replacement where the result is an improvement over existing conditions.** We have built several new and replaced dozens of existing bulkheads on Lake Washington over the past several years, 3 of which are currently being constructed within a couple miles of Kirkland, and no additional reports were required except for a Biological Evaluation (BE) to address impacts to listed species and critical habitat which the Corps is mandated for consultation with the federal services under Section 7 of the Endangered Species Act. This once again supports the strict but responsible and flexible standards carried out by state and federal regulatory agencies. If a set of rigid and overly restrictive standards are included in a local SMP it will have far reaching impacts that City staff may not understand based on this statement. **For many property owners it will**

mean allowing existing bulkheads to fail and fall into the water rather than applying for repair or replacement. This will have a much greater impact on habitat than the assumed impacts from the bulkhead itself and will deter the installation of more habitat friendly bulkheads.

- 10) Page 6 of 11 (top middle)

The City has a responsibility first and foremost to its citizens and not WRIA-8. WRIA-8 is a respectable agency but they are primarily an environmental group that has targeted bulkheads and piers and do not typically provide a balanced approach. I have attended WRIA-8 meetings and shared many of our pier and shoreline designs and ideas and they were well received. I also provided a perspective from the property owner and industry side, the inconclusive science used to arrive at their position and that many properties are not candidate for what they would like to see. We also contributed much time and professional opinion to the City of Seattle "Living Shorelines" Handbook soon to be released.

If the City is going to promote WRIA-8 recommendations please provide data on how many City owned bulkheads have been removed as a result of these same principles. How many City owned docks, overwater and nearshore walkways have been removed, reduced in size, had treated piling replaced with steel piles using longer spans, or replaced a solid surface with a fully grated surface? If the City is making private property owners bear nearly the full burden of the SMP Update, as unfair as that is in and of itself, then it should set an example so the entire public shares the load. This could mean reducing the public access that is synonymous with Kirkland and already accommodated by many gracious private property owners. Nobody wants to see this happen but it is equivalent to the burden being placed on Kirkland's waterfront property owners if the SMP Update moves in its current direction.

- 10) I would also like to note that while the public and waterfront property owners have given public testimony and the City staff and Planning Commission have expressed a genuine interest in assuring their concerns are taken into consideration, that it appears the City is directing the SMP Update primarily at private development as evidenced by an e-mail response from Terese Swan to Mr. Dick Sandaas, a part of which is attached below.

Subject: RE: SMP update mailing
Date: Wed, 5 Nov 2008 09:47:30 -0800
From: TSwan@ci.kirkland.wa.us
To: eride@msn.com

Hi Dick

Most of the new shoreline regulations will be addressing private development (as does the Zoning Code). It is important to highlight that private properties along Kirkland's shoreline are highly armored which is impacting the biological function of the lake. The No Net Loss standard and mitigation elements in the DOE guidelines look at individual properties and only somewhat of the entire system. These existing bulkheads will be one of the key focuses of the SMP update.

Does this make sense now?

Teresa Swan
Senior Planner
(425) 587-3258 Fax (425) 587-3232
tswan@ci.kirkland.wa.us
City of Kirkland
123-5th Ave
Kirkland, WA 98033

Please review the Lake Washington/Sammamish SMP Guidance Fall 2008 recently distributed by DOE and explain where the above positions are supported. Please also provide the WAC, SMA Update, or Washington State Legislative references that specifically target private development since it is my understanding that protecting the rights of private property owners are one of the primary concerns of our legislature.

It is my understanding in speaking with DOE and local planners and reviewing the guidelines that the SMP Update's main concern is the "entire system" which is in direct conflict with what is being stated in the e-mail. Our position with DOE and local governments enveloping an overly aggressive approach from the beginning has been that an existing bulkhead and/or pier can be repaired or replaced in such a manner that the "no net loss" goal as defined can be met and in most cases result in a "net gain". While private development consisting mainly of residential waterfront properties are not the focal point in the SMP guidelines over any other private or commercial development along the shoreline, we believe that individual projects on each privately owned property can render a "no net loss of shoreline ecological functions" and contribute to the overall "no net loss" goal of the "entire system". This does not require the total removal of a bulkhead and replacement with a natural shoreline but can be accomplished by a total bulkhead replacement in a more fish friendly design including cobble and gravel to provide toe protection for erosion and shallow nearshore fish habitat. Additionally, it does not require an existing pier to be replaced with a pier that conforms to the guidelines of the Corps RGP-3 since a new pier can be built in a variety of sizes and designs and still yield a "no net loss" or "net gain". It cannot be overstressed that less than 5% of piers approved in Lake Washington and Lake Sammamish have complied with the RGP-3 guidelines.

Each of these privately owned structures, whether a bulkhead, pier or residence, was at one time approved by local, state and/or federal regulatory agencies. To make changes that will essentially declare one or more element (house, pier bulkhead, or other accessory structure) on each private property as legally non-conforming triggering an entirely new set of review criteria, or to push many more projects into the Shoreline Variance or Conditional Use processes must be given very careful consideration. Has anyone at the City researched how many properties will have at least one non-conforming structure following the adoption of the new SMP? If an existing bulkhead or pier cannot be rebuilt in the same configuration due to new regulations in the SMP are they not for all intents and purposes "non-conforming"? If so, how does the City plan on handling this property rights issue and the legal challenges that could result? This is totally different from periodic changes made to a building code since DOE has allowed over 35 years to pass without periodic SMP updates which would have addressed much of the issues local governments are trying to make through sweeping and overly aggressive changes. It appears the onus of responsibility is now placed on the individual property owner to amend for this long-term neglect.

Thank you for the opportunity to provide public comment which I believe the City of Kirkland takes seriously. I appreciate the transparent process the City is using during this update and trust that the approved SMP will be a document the City can proudly claim has evaluated and protected the property rights of all citizens living within its borders, especially those residents directly impacted by such regulations.

Sincerely,

David Douglas
Permit Coordinator
Waterfront Construction, Inc.

Teresa Swan

From: RLSTYLE [rlstyle@aol.com]
Sent: Tuesday, November 18, 2008 12:34 PM
To: KirklandCouncil
Cc: nelsonmb@gte.net; eride@msn.com; jrogers407@comcast.net; Teresa Swan; Eric Shields
Subject: Shoreline Master Program

Honorable Councilmembers:

At the Moss Bay neighborhood meeting last night (11/17/08), Teresa Swan presented information on the SMP. About 15 people were there.

She insisted that bulkhead removal or modification was necessary to improve the environment for Chinook although she could not produce a map, chart, or information showing their migratory routes or where they are. I contend that rules are being unjustly proposed and have no basis of fact.

Are there Chinook in Kirkland? I don't think so. They certainly do not spawn here. Do they migrate close to Kirkland's shoreline going under docks and marinas? I haven't seen any documentation that proves it one way or another.

I asked Ms. Swan to contact the DOE, the state agency that's pushing the new rules, for information that justifies their position on Chinook. I believe my request landed on deaf ears.

On a personal note, Waterfront Construction repaired my bulkhead last week according to the new design standards even before the new requirements are adopted. In essence, it was their way or no way if I wanted my bulkhead repaired. Bulkhead "Softening" was required. The city, Corps, fisheries, and DOE all had their way. So I had to add sloping size gravel on top of which was spawning gravel for fish that don't spawn here. Some 5 months and \$15,000 later, I now have a city, state, and federally approved bulkhead. Why are we upgrading the SMP?

Ms. Swan and Mr. Stewart of the Planning Department need some of the "guidance" the council is famous for.

Robert L. Style
6735 Lake Washington Blvd, NE
Kirkland, WA 98033
425-827-0216

Teresa Swan

From: Daved [Daved@waterfrontconstruction.com]
Sent: Monday, November 24, 2008 2:19 PM
To: Paul Stewart; Stacy Clauson; Teresa Swan
Cc: jrogers407@comcast.net; Mark Nelson
Subject: KIRKLAND PC MEETING AND SMP UPDATE CONCERNS

Hi Paul, Stacy and Teresa,

After attending the Planning Commission Meeting last evening I am very concerned at some of the discussion and questions asked by the Commissioners considering how far along the City is in the SMP Update process. I understand shoreline issues can be pretty complex and when mingled with state and federal regulatory guidelines no one can be expected to know everything, but with some of the elementary and basic questions that were asked and the responses being provided by city, state and biological consulting staff it was difficult to keep things internalized. I realize the Commissioners are doing their best to serve their community but they are in a position to make recommendations that will impact many citizens but seem untrained as to how the system works. This is not totally their doing because they obviously have day jobs but I do think it is City staff responsibility to provide them with the best and most well rounded education possible. As it is set up right now, not only in Kirkland but other waterfront communities, these trusted leaders are being spoon fed from a one-sided source with a one-sided agenda. If they understood the entire process they might ask DOE the same questions the frustrated, angry and scared property owners who place their trust in you are asking.

Property owners who have been through the process probably have a better understanding than the Planning Commission, City Council, and maybe even some planners, but they no authority or influence as average citizens. Commission and Council members have a thankless job at times but clearly enjoy the authority and responsibility of their positions. This is a much more enjoyable place from which to operate than the everyday citizen who in this case are waterfront property owners directly impacted by a seemingly futile process. They are heard and acknowledged out of routine but are rendered powerless by a so called "democratic" process.

No Commissioners live on the water so they don't have a vested physical or financial interest per se and it is unknown if they have ever seen a set of plans for a bulkhead or pier replacement or shoreline restoration project. **Has the City taken the initiative to invite anyone in to review the entire permit process from beginning to end with your Planning Commission or City Council from an applicant's perspective? If it has not but are willing, I would open to review one or two of my more complex projects with both of these leadership bodies and bring a slide show presentation of completed projects we run at the Seattle Boat Show. One of the projects can be a recent Kirkland project approved thorough a non-conforming RGP3. It will give them a good idea on the processes a project goes through at the local, state and federal levels to provide a better understanding of what waterfront property owners are doing to either improve conditions at their site or mitigate for the assumed impacts. They will also be able to see that Kirkland for the most part has excellent control of their shorelines even under the existing SMP.** The only qualification I have over others who do permitting for a living is a willingness to get involved and a passion to help local governments see the entire picture and for property owners to be treated fairly, respectfully and honestly. If my experience can help I certainly want to do my part.

The only reason SMP's need updated is to fulfill a legislative mandate and the main reason I see that DOE needs separate guidelines from more highly qualified agencies such as WDFW, Army Corps of Engineers, U. S. Fish and Wildlife and NOAA-Fisheries is to sustain the agency. Each of the aforementioned agencies (WDFW and Federal) employs biology staffers directly involved in the permitting process and take seriously their responsibility to protect listed species and critical habitat under the state and federal ESA. DOE staff directing local governments through the SMP Updates are not biologists, ecologists, or any other type of biological professional for the most part, but are ambassadors promoting a program. They are viewed as a trusted authority simply through their position with the agency and no hard questions are asked by staff, commissions or councils, often because they do not know what to ask. Information exchanges at public forums are too formal to be real and accomplish anything. This places the entire update process in a highly vulnerable position. If the legislature understood the process for shoreline projects currently in place one must wonder if the SMP updates would even be required. If they do understand the process then one must ask why they still choose to have an overlapping of responsibilities.

Along with most people, I am not opposed to voluntary shoreline restoration projects and we have done quite a few in the right locations. They look beautiful, provide a beach, improve access to the lake, are fun, and can provide some environmental benefits. Like most people however, I am opposed to government taking over private property for any

reason, especially by using inconclusive science when there are no measurable standards being provided. Guesswork and arbitrary requirements erring on the side of regulatory and opposing private property rights is a recipe for controversy and legal challenges. In meeting with DOE a couple months ago and seeing the guidance letter they distributed it appeared there was an understanding that bulkheads can be replaced with “no net loss of ecological functions” in each and every case, whether partial or full replacement. Partial or full restoration of the shoreline is the desired outcome by the state but that is not always possible and the state has admitted that partial removal with a cove is viewed favorably. Was this part of the letter from DOE skipped over?

How will you process a project which has a wide and deep enough property to remove a full length bulkhead and install a partial bulkhead at each end and a cove in the middle similar to the picture shown from the Seattle Handbook (which we contributed to and provided feedback)? It is considered an improvement and will clearly meet “no net loss” (depending on what definition is being used on a given day) but part of it will still be hard stabilization. **Will you require a geotechnical analysis for someone making such an improvement? Will it qualify for an exemption or will you make it go through a more stringent process? Where will you draw a threshold to view a project as a partial or full shoreline restoration versus just a bulkhead replacement?**

This is important because people are more willing to do a partial restoration when they can. This will always be more suitable at a site where the water depth at the bulkhead is minimal and the bottom contour is gradual rather than several feet deep with a steep contour because one of the design considerations is matching the restored shoreline to the existing grade and bottom contour to prevent accelerated erosion. On a recent project in Seattle we were approved to replace an entire bulkhead in the same footprint because restoring a natural shoreline based on the geotechnical analysis and based on wind, wave and soil conditions at the site and on the adjacent properties would have required a 30 to 40 foot cut into the upland and removing several hundred cubic yards of dirt to match the 3 feet of water depth and the bottom contour. In addition, shifting the bulkhead upland or relocating the Ordinary High Water Mark landward would have caused the house to be a non-conforming structure because of impervious surface thresholds and also impact future additions or modifications. The big picture involves more than what takes place at the water’s edge and it is important for Commissioner and Council Members to be made aware.

There is too much at stake to get this wrong. If you would like to accept my offer please let me know. Although I do not have a formal presentation established I can put something together to present before such a distinguished group. I feel so strongly about what is going on and how it is being done and am familiar enough with the multi-level permitting process that I think I could handle it. The goal would be simply to provide an advanced understanding of the permitting process as seen through the perspective of an experienced agent and how it all comes together to result in the construction of a shoreline pier, bulkhead, or shoreline restoration project. It is a complex, orderly, and thorough process that addresses all concerns from local, state and federal regulatory agencies in regard to impacts on listed species and critical habitat specific to each site or region.

Thank you on behalf of your City’s waterfront property owners for a transparent, balanced and fair process.

Dave Douglas
Waterfront Construction, Inc.

Mark B. Nelson
299 Lake Avenue West
Kirkland, WA 98033-6139
425-576-5670
425-576-5438 (FAX)
nelsonmb@gte.net

November 24, 2008

Houghton Community Council
123 Fifth Avenue
Kirkland, WA 98033

Re: Shoreline Master Program Update

Enclosed you will find illustrations from the City of Kirkland Planning Department which were presented to the Kirkland Planning Commission on November 20.

These illustrations provide you with an advance look at what you will be asked to consider in the coming months as you learn more about the Shoreline Master Program Process.

As a shoreline property owner I find the illustrations profound examples of what is being proposed to happen to shoreline property.

I'm sure that your constituents will be interested in being alerted to these illustrations and being provided with the opportunity to engage in the planning process.

I requested that the City notify each affected property owner with an illustration for their specific property. I encourage the Houghton Community Council to also request that the City advise each individual property owner concerning the impact of the illustrations.

Very truly yours,



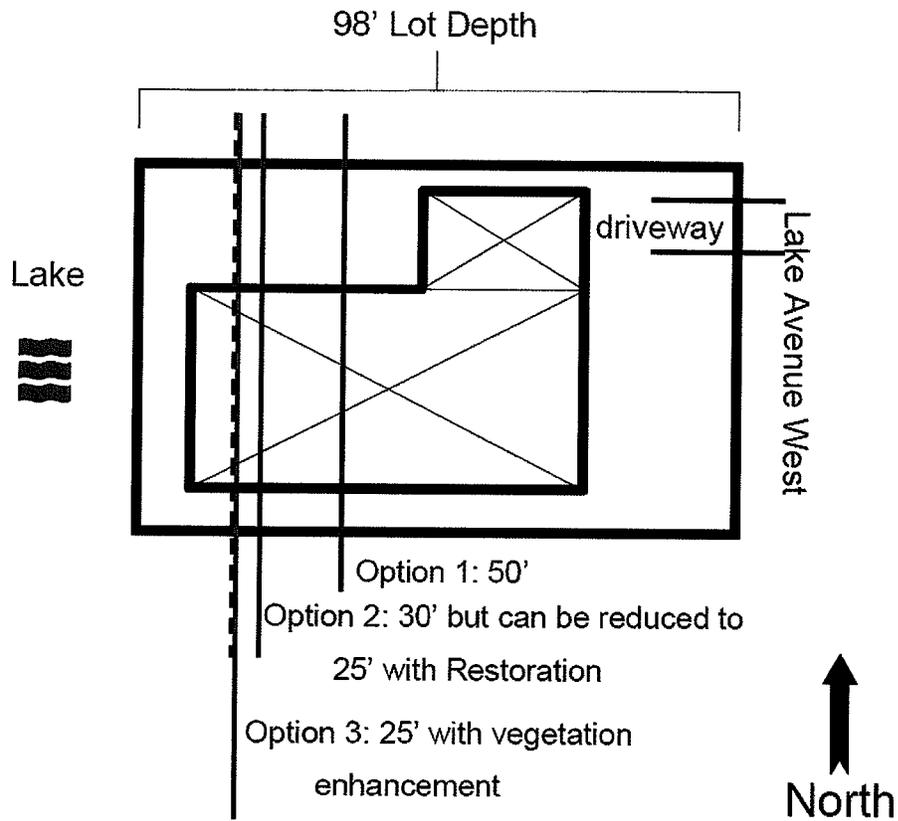
Mark B. Nelson

Enclosures: As Stated (4 pages)

Existing Single Family Setback in Market St. Neighborhood

Lot Depth Group of < 100'

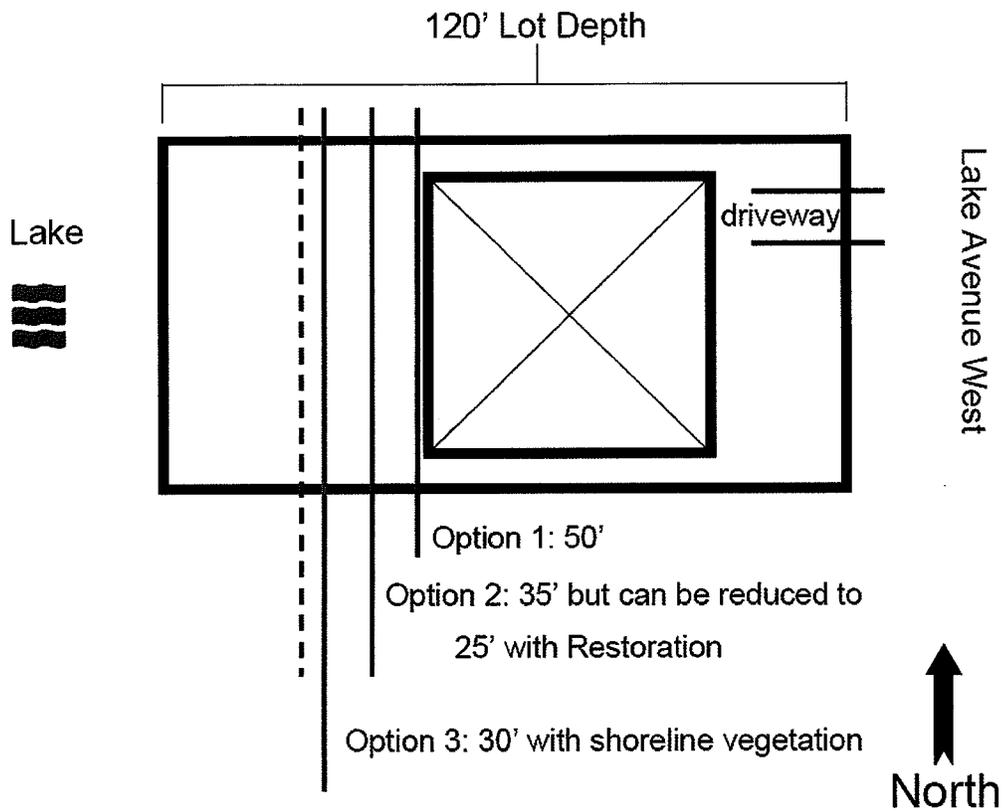
13.2' Setback (Low Range Group)



Existing Single Family Setback in Market St. Neighborhood

Lot Depth Group of 100' – 175'

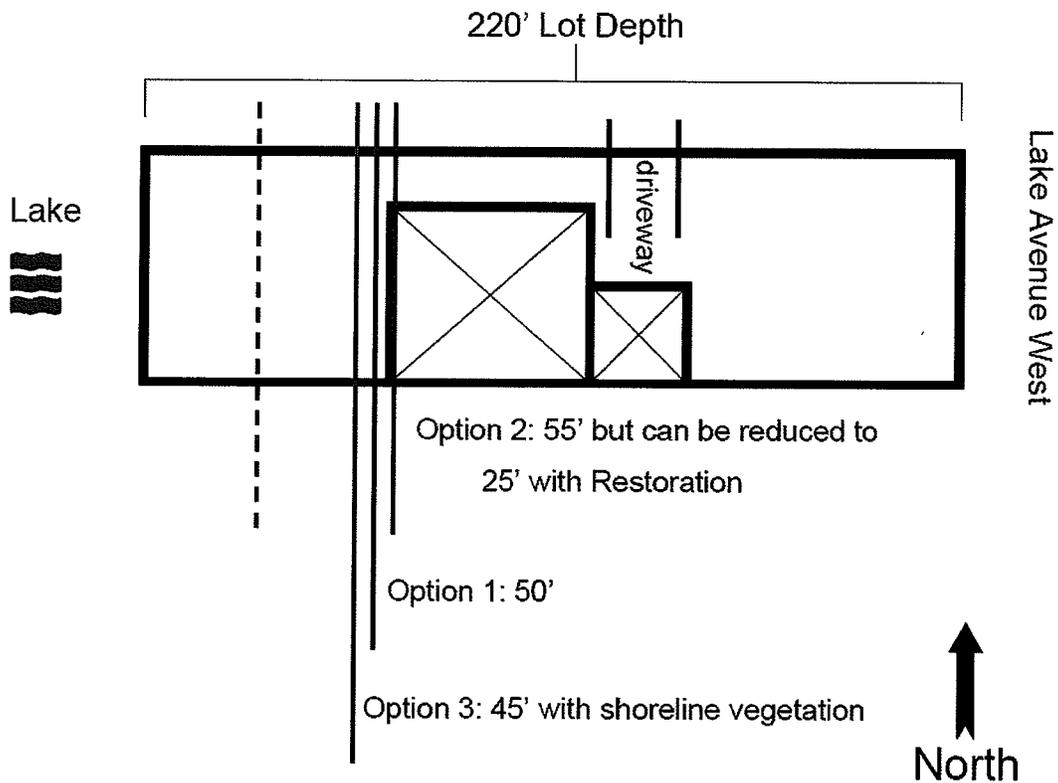
54.71 Setback (Median Range Group)



Existing Single Family Setback in Market St. Neighborhood

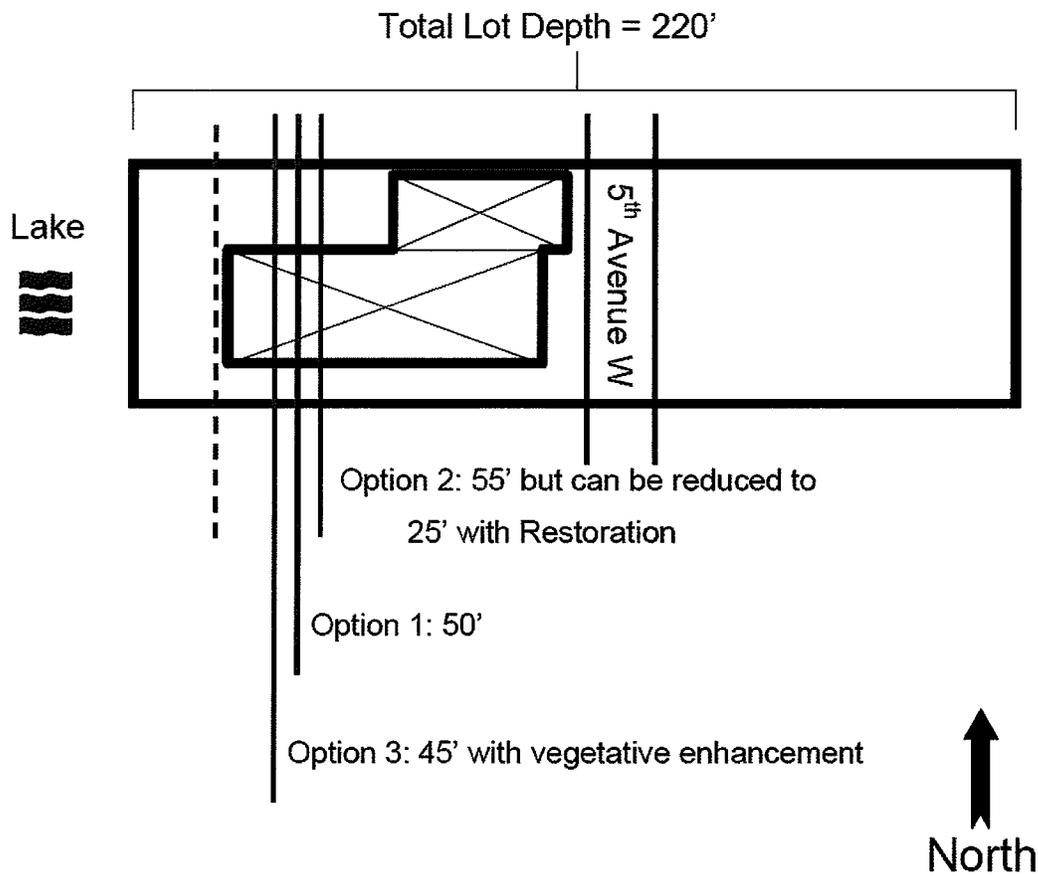
Lot Depth Group of > 175'

54.71' Setback (Upper Range Group)



Existing Single Family Setback in Market St. Neighborhood 5th Avenue West

31.03' Setback with split lot depth



Teresa Swan

From: RLSTYLE [rlstyle@aol.com]
Sent: Tuesday, November 25, 2008 10:32 AM
To: Teresa Swan
Cc: KirklandCouncil; nelsonmb@gte.net; jrogers407@comcast.net; eride@msn.com
Subject: Shoreline information

Teresa:

A sincere thanks for researching and providing the information I asked regarding the migration pattern of Chinook and other fish. It's a mass (or mess) of information I'm still trying to digest. Your doing great for the fish. Now it's time to do great for property owners.

Some of my initial impressions so far from all the data are:

Opinions need to be based on facts. Yes there are fish in Lake Washington. Other than streams, their migration patterns are not specific enough to justify putting the onus of construction, development, and modifications to single family homes solely on the property owner. Many homes will lose value and be limited from full utilization of their property if the new SMP "guidance" standards are adopted.

There are so many disclaimers to the maps and statements shown in the studies that it almost makes them worthless, almost. Just how much needs to be determined before governments take away or reduce what is now usable property for a single family home. And, they should not require the property owner to pay for their losses through Conditional Use Permits (CUP) and Substantial Development Permits (SDP).

One of the studies you referred me to showed a map of the Salmon Recovery Funding Board (SRFB) Projects. **None of them are in Kirkland.** If Kirkland thinks that protection of salmon is so important, why hasn't Kirkland applied for one of their grants. The information only goes to 2007 so may be you already have. Funding for the lake's improvement to restore habitat could come from several sources. How about these?

Because the Lake can be enjoyed by everyone in the State and County, get a grant to the city from DOE or the SRFB to soften all the existing hard bulkheads by installing sloping cobbles to the bulkheads and to provide calm waters for the fish to migrate. Pardon the comparison but it would be killing two birds with one stone. You could protect property thereby meeting one of the requirements of the SMP and you could help restore the environmental conditions for fish migration, another requirement of the SMP.

At last night's Houghton Community Council meeting, staff explained a multiple of times that even without a CUP or SDP, property owners still have to meet city standards controlled through Kirkland's land use regulations. Even though I was exempted from an SDP, I was still required to put in sloping cobbles and spawning gravel even though fish do not spawn there. That being the case, why can't the city notify the DOE it is already in compliance with the SMP goals of restoring habitat and protecting property?

For the city to spend money on private property for public benefit is not unprecedented. As an example, the city installed a \$345,000 reinforced bank (in other terms, a bulkhead on a stream) on private property to stabilize Juanita Creek to prevent erosion. That's not much different than stabilizing the shores of Lake Washington. Also, we all pay for surface water management regardless if we personally benefit or not. It's the social thing to do and keeps the price per property down because everyone has to pay rather than a few. Why not do the same for the improvements needed to Lake Washington? The City, County, and State all benefit from the Lake therefore all should pay. Having the City install sloping cobble makes sense.

More to come later.

Bob Style

