



MEMORANDUM

Date: April 19, 2016

To: Planning Commission

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Subject: Chapter 90 KZC Amendments (Critical Areas Ordinance/Wetlands, Streams and Frequently Flooded Areas Regulations), File CAM15-01832, #2

This memo addresses the following topics:

- Follow-up on Buffer Width Standards
- Fish and Wildlife Conservation Habitat Areas (Streams)
- Buffers for Day lighted Streams
- Maximum Development Potential
- Off-site Mitigation Policy

I. RECOMMENDATION

Staff recommends that the Planning Commission review the issues discussed in the memo and provide direction or comments to staff for preparation of draft code amendments.

The memo is organized by each topic as noted above. After each topical section is discussed, there is a staff recommendation for the Commission's consideration.

II. BACKGROUND

On [March 24, 2016](#), the Planning Commission held a study session and discussed the following topics:

- Follow-up on Wetland Buffer Width Standards
- Nonconformances
- Permitted Uses and Activities
- Number of Parcels Impacted by the Code Amendments
- Effect of Code Amendments on Prior Approvals and Pending Permits

The Commission requested additional information on buffer widths and deferred providing direction on the topic until they have a better understanding of how buffers are addressed in neighboring jurisdictions.

Staff is not looking for a final recommendation from the Planning Commission at this point, but rather a starting direction. Based on the Commission discussions, staff is beginning to draft the specific code provisions. Once a revised draft Chapter 90 is prepared, the Planning Commission can further consider its recommendation by looking at the complete set of regulations for buffers, completely or partially exempted activities, nonconforming structures, maximum development potential and other provisions that will affect overall developments.

Follow this link to view the current [Chapter 90](#) regulations. A copy was also provided as Attachment 6 to the March 24, 2016 memorandum.

III. FOLLOW UP ON BUFFER WIDTH STANDARDS (High Policy Issue)

A. Planning Commission’s Discussion on March 24, 2016

At the [March 24, 2016](#) meeting, the Planning Commission requested that staff bring back information on when other jurisdictions require applicants to widen buffers when the buffer is not fully functioning. Staff has provided information below on four nearby cities. These are cities that have recently amended their regulations to use the new Department of Ecology 2014 rating system of Categories I-IV and Habitat Scores of 3-9. Other local jurisdictions have not yet updated their regulations with the new 2014 rating system so comparing their buffer widths standards is problematic.

Staff contacted three of the four cities listed in Attachment 1 from the March 24, 2016, meeting to ask whether they have required applicants to widen buffers for any projects. Woodinville just adopted its regulations last month so it is premature to contact them.

Jurisdiction (All adopted 2015)	When Buffers May be Required to be Increased	Have any applicants been required to increase buffers?
Kenmore	<ul style="list-style-type: none"> • Buffer width may be required to be widened if, based on a critical area report, it is necessary because of geologically sensitive areas or adjacent critical areas. • Buffers may be required to be enhanced depending on the management plan for a site containing endangered, threaten or sensitive species (applies to streams only). 	No.
Redmond	<ul style="list-style-type: none"> • Wetland buffer width may be required to be widened on a case by case basis to protect the wetland based on specific site characteristics. 	No. No project has had unique circumstances yet that required a wider buffer. Redmond added

	<ul style="list-style-type: none"> Stream buffer widths may be required to be widened if it is determined needed to protect habitat areas, to incorporate frequently flooded areas and in landslide hazard areas. 	the provision to be consistent with Ecology's model ordinance.
Renton	<ul style="list-style-type: none"> Buffers may be required to be enlarged due to unique circumstances. Buffers may be required to be enhanced to protect the wetland. Stream buffer widths by be required to be increased if site is in high blow-down (wind) areas, habitat corridor or in a landslide area. 	New regulations were adopted in January 2016 so they have not used the widening provisions yet under the new regulations. But they did have the same provisions under the prior code and did require a wider stream buffer for a project.
Woodinville	<ul style="list-style-type: none"> Buffer width must be increased by 33% if the applicant opts not to implement nine minimizing standards (taken from see Ecology's model ordinance). Buffer width may be required to be wider if, based on a critical area report, it is necessary because of geologically sensitive areas, adjacent critical areas or the site contains endangered, threatened, priority species and a wider buffer is needed to protect its habitat. 	Adopted March 2016 so no projects under new code yet.

One Planning Commissioner indicated during the March 28, 2016, meeting that he has never been required to widen a buffer as part of development. Situations where buffers may be required to be increased include development located in:

- Geologically hazardous areas
- Floodplain areas
- Endangered, threatened or sensitive habitat areas based on the federal and state listings
- A critical area that has a unique circumstance (such as a combination of habitat, value of wetland and/or slope) or to maintain the value of the wetland. This provision is likely provided for the unusual and unforeseen case. The City is familiar with its range of critical areas so it is unlikely that Kirkland has a situation that would not be addressed by one of the buffer categories.

B. Staff's Recommended Approach to Buffer Widths based on the Planning Commission's Discussion and Other Jurisdictions

Issue: Should the recommended approach to buffer widths described below be used in the revised draft Chapter 90?

The Planning Commission has indicated an interest in having one buffer width standard similar to other jurisdictions with a clear vegetative buffer standard. Based on this approach and to be more consistent with other local jurisdictions, staff recommends that we move away from Department of Ecology’s model ordinance of a two tiered buffer standard and use a simpler one buffer width standard.

1. **Use the Department of Ecology’s narrower buffer width standards** from its model ordinance as follows:

Recommended Wetland Buffer Standards

Wetland Category and Type	Buffer width (in feet) based on habitat score (3-9)			
	3-4	5	6-7	8-9
I: Bogs and wetlands of high conservation value	190			225
I: All others	75	105	165	225
II	75	105	165	225
III	60	105	165	225
IV	40			

(Note: it is unlikely that Kirkland has a Category I Bog wetland)

Woodinville adopted the same wetland buffer standard above last month. Redmond’s standards are slightly smaller for the habitat 5 score but much larger for the 3-4 and 8-9 habitat scores. Renton’s standard is larger in one habitat score category and smaller in another category. Kenmore did its own Best Available Science study and its standards are different. Other local cities have not updated their rating systems to the new 2014 rating system yet so it is problematic to make an exact comparison, but the buffer ranges are very similar.

Recommended Stream Buffer Width Standard

Stream Type	Buffer Width
F	100 feet
Np	50 feet
Ns	50 feet

For the F stream type, Bellevue, Bothell, Kenmore, and Federal Way all require 100 feet – same as above. Redmond, Sammamish, Woodinville and King County have wider F stream type buffers.

For the Np stream type (year round stream with no fish), Bellevue, Kenmore, Federal Way all require a 50 foot buffer – same as above. Six other local jurisdictions have wider buffers than above, including Redmond and Woodinville.

For the Ns stream type (seasonal stream with no fish), Woodinville, Sammamish and Bothell all require a 50 foot buffer – same as above. Six local jurisdictions have a narrower buffer width requirement.

2. **Establish a vegetative buffer standard or a set of guidelines.**

The Planning Commission indicated an interest in a vegetative buffer standard to clarify what is a well-functioning buffer. The standard could be very specific or used as a best management practice guideline. The City's shoreline regulations have a specific required vegetative standard for the shoreline vegetative buffer next to the lake (Section 83.400 KZC). The standard has worked well with ease in administration and with clear expectations for applicants. A similar approach for wetland and stream buffers could be used for Chapter 90. The standard below reflects common riparian buffer performance standards but less specific to account for a range of potential existing vegetated conditions.

Here is a draft **vegetation standard** that could be required:

- Native cover of at least 80% on average throughout the buffer area with 2 out of 3 of the following strata of native plant species composing of at least 20% areal cover:
 - Multi-age forest canopy (combination of existing and new vegetation)
 - Shrubs
 - Woody groundcover (such as kinickinick, salal and sword fern) or unmowed herbaceous groundcover
- Less than 10% noxious weeds cover using King County weed list (but require removal of knotweed which is very invasive)
- At least three native species each making up a minimum of 10% cover (for diversity)
- Removal of lawn (source of fertilizers, fecal coliform from pets and herbicides detrimental to wetlands and streams)

Other local cities require that buffers be vegetated with native plants. For example, Redmond requires that buffers be undisturbed areas of native vegetation and that degraded buffers be planted with native vegetation pursuant to an approved planting plan (Redmond Zoning Code 21.64.010.Q.1).

If a specific standard is the desired approach, we will want to build in some flexibility to allow deviations from the standard for special site conditions, integrating existing native vegetation or other factors.

In addition to a vegetative standard, the narrower buffer would require implementation of the **nine minimizing standards** pursuant to Ecology's model ordinance. Other local cities require these same standards to be met. These standards were discussed at the [February 25, 2016](#) meeting:

Measures to Minimize Impacts to Wetlands for Reduced Buffer Width

Disturbance	Required Measures to Minimize Impacts
Lights	<ul style="list-style-type: none"> • Direct lights away from wetland
Noise	<ul style="list-style-type: none"> • Locate outdoor activity that generates noise away from wetland • If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source
Toxic runoff	<ul style="list-style-type: none"> • Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 feet of wetland • Apply integrated pest management
Stormwater runoff	<ul style="list-style-type: none"> • Retrofit stormwater detention and treatment for roads and existing development adjacent to the site • Prevent channelized flow from lawns that directly enters the buffer • Use Low Intensity Development techniques (per Puget Sound Action Team publication on Low Impact Development techniques)
Change in water regime	<ul style="list-style-type: none"> • Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	<ul style="list-style-type: none"> • Use fencing OR plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion • Place wetland and its buffer in a separate tract or protect with a conservation easement
Dust	<ul style="list-style-type: none"> • Use best management practices to control dust
Disruption of corridors or connections	<ul style="list-style-type: none"> • Maintain connections to offsite areas that are undisturbed • Restore corridors or connections to offsite habitats by replanting

Applicants would have the option of not meeting the vegetative standard and the nine minimizing standards if they prefer by increasing the buffer width by 33%. Woodinville has a similar provision with the same percentage of increase.

3. Allow Buffer Width Averaging

Under this approach, an applicant may use buffer averaging as an option. Buffer averaging allows the reduction of a buffer width in one area with an increase in another area so that the total buffer width area is still provided. Buffer width averaging would be allowed if it will improve the critical area function or is the only way to allow for reasonable use of the parcel (reasonable use exception). The buffer cannot be reduced by more than 25% of the standard buffer width in any location.

Buffer averaging provides flexibility for development of a site.

Note that BAS will not support an overall reduction in buffer width if the City proceeds with this lower buffer standard. Most local cities allow for buffer averaging but not buffer reduction. The 25% maximum buffer reduction for buffer averaging is common to all local cities.

Advantages of the buffer width approach outlined above are as follows:

- A simpler set of regulations
- The number of new nonconforming structures will be less with the one narrow width buffer option
- The current Chapter 90 requires a buffer reduction permit to have a smaller buffer in exchange for planting native vegetation. The permit takes four or more months and a permit fee. The public can challenge the permit as a way to challenge the project. The new approach would do away with the buffer reduction permit which would shorten development review time and reduce permit costs, and free up staff time for other permits and projects.

The approach does require an applicant to plant native vegetation and remove invasive species in most cases. However, almost every applicant already now makes these buffer improvements as part of the buffer reduction permit to reduce the size of the buffer. It is rare when a property owner does not choose to take advantage of the buffer reduction option and thus does not plant vegetation in the buffer. So replanting the buffer will not be a new burden on homeowners or developers.

Staff recommendation:

Use the buffer width approach described above for the draft Chapter 90. Have a vegetative standard with some flexibility for deviations based on criteria or at least as best management practice.

Does the Planning Commission concur with this approach?

IV. FISH AND WILDLIFE HABITAT CONSERVATION AREAS

Fish and Wildlife Habitat Conservation Areas are areas for:

- **Federally endangered, threatened or sensitive species** as determined by U.S Fish and Wildlife Services (USFW) and National Marine Fisheries. These are fish and wildlife that are in danger of extinction or threatened to become endangered.
- **State designed endangered, threatened and sensitive species** as identified by Washington Department of Fish and Wildlife (WDFW). These are fish and wildlife species native to Washington that are in danger of extinction or threatened to become endangered, vulnerable or declining in a significant portion of their range in the state.
- **Habitat and Species of Local Importance** as identified by a local jurisdiction or nominated by an individual or group and then accepted and adopted by that jurisdiction. These are habitat and species of importance due to their population status or sensitivity to habitat manipulation and need protection. These may include State Priority Habitats and Species identified for conservation and management as determined by Washington Department of Fish and Wildlife (WDFW). A priority habitat may have unique vegetation type of dominate plant species.

A. **Endangered, Threatened or Sensitive Species** (Low Policy Issue)

1. Background:

Under [GMA](#), jurisdictions must have regulations that protect [fish and wildlife habitat conservation areas](#) and their buffers for endangered, threatened or sensitive species. Required buffer widths must reflect the sensitivity of the habitat and the type and intensity of human activity proposed to occur nearby consistent with the management plans issued by the Washington Department of Fish and Wildlife, United States Fish and Wildlife and National Marine Fisheries. These **management plans** vary by species and include a buffer zone, preservation of vegetation and/or habitat features, limit access to the habitat area including fencing, seasonal restrictions of construction activities, periodic review of mitigation activities and requirement of a performance bond to ensure completion and success of mitigation.

The only species on the endangered, threatened or sensitive listing that is in Kirkland is the **bald eagle** which is classified as “sensitive” under the state listing and as a “species of concern” under the federal listing (see [Best Available Science Report](#)). The Watershed Company has a correction for the BAS report, which is that the **pileated woodpecker** is not classified as a “sensitive species” but as a “candidate species” so it is not on the endangered, threatened or sensitive listing.

2. Other local jurisdictions:

Local cities all have similar regulations that address Endangered, Threatened or Sensitive Species and that reference USFW and WDFW management plans. The jurisdictions require that a management plan be prepared as part of the **critical area report** or as a separate plan using WDFW and USDFW standards. They also require further mitigation beyond the local buffers if it is demonstrated that the buffer is insufficient to prevent habit degradation.

3. Staff Recommendation:

To meet GMA and to be consistent with other local jurisdictions, the revised Chapter 90 should have a section that addresses Endangered, Threatened or Sensitive Species with a reference to state and federal management plans.

Does the Planning Commission concur with this approach?

B. **Habitat Associated with Species of Local Importance** (Medium Policy Issue)

Issue: Should the City have a listing of species of local importance and/or have a nomination process?

1. Background:

Under GMA, the City should have a listing of species of local importance or at least a nomination process. Implications of the list would mean that management plans for these species would need to be addressed in the critical area report and implemented, referencing WDFW management plans.

2. Other local jurisdictions:

Redmond (Great Blue Heron), Bellevue (23 fish and wildlife species), Woodinville (20 fish and wildlife species) all have a **listing of local species of importance**. Kenmore specifically regulates blue heron rookeries and bald eagles. Kent also regulates blue heron habitat.

Redmond, Bellevue and Woodinville all have **nomination processes** using the Code Amendment process and having nomination criteria. In Bellevue and Woodinville an individual or group can make a nomination. In Redmond, the code only mentions that the City Council can nominate a species.

3. Kirkland's Species of Local Importance:

The City's [Best Available Science Report](#) dated January 2016 identifies the following **Priority Fish and Wildlife Species in the city:**

Fish in Kirkland based on The Watershed Company's documentation:

- ✓ Chinook salmon (federal threatened status and State candidate)
- ✓ Steelhead (federal threatened status and State candidate)
- ✓ Coho salmon (federal species of concern)
- ✓ Sockeye/kokanee salmon (state concern status)
- ✓ Cutthroat trout (priority species, but no other state or federal status)

Priority Species in Kirkland mapped by WDFW:

- ✓ Pileated Woodpecker (candidate for priority species)
- ✓ Great Blue Heron (monitor for priority species)
 - Purple Martin (candidate for priority species)
 - Trumpeter Swan (no state or federal status)

Since the **bald eagle** is on the endangered, threatened or sensitive listing, it does not need to be listed as a species of local importance. The Watershed Company does recommend that the **Pileated Woodpecker** and the **Great Blue Heron** along with the five fish be listed as species of local importance. The Pileated Woodpecker habitat is located within Finn Hill on properties already under the Holmes Point Overlay (which limits tree removal and grading) and in some of the city parks. The Great Blue Heron habitat is located in the city's Yarrow Bay Park. WDFW has established management plans for these two species which would be referenced in the critical area report for any development proposal that would occur within these habitat areas. In almost all most cases, the required stream buffers will provide sufficient habitat for the five fish listed above.

These species are found on either or both of Bellevue and Redmond’s local priority species lists.

TWC does not recommend the **Purple Martin** or the **Trumpeter Swan** since the Purple Martin has only one mapped occurrence (so it is rare) and both species are only found in Juanita Bay which is regulated under shoreline jurisdiction by Chapter 83 and not Chapter 90.

4. **Staff Recommendation:**

List the five priority fish and two wildlife species discussed above as species of local importance. This would show the City’s support of protecting these species by requiring the WDFW management plans be implemented for the species.

Provide a nomination process with criteria for possible future local listing using a Process IV: Code Amendments. Chapter 90 would be amended if the nomination was approved. Use similar criteria adopted by other local cities to ensure that the nominations have merit based on scientific documentation and is not used as a means to possibly stop or delay a development by filing a frivolous nomination.

Does the Planning Commission concur with this approach?

V. STREAM DAYLIGHTING (Low Policy Issue)

Issue: Should the City have a provision that allows stream buffer widths to be determined on a case by case basis for daylighting or other stream modifications that improve the overall function of the stream and/or fish habitat or are needed to stop erosion?

1. Background:

The City encourages daylighting of streams that are in culverts to improve fish habitat or in some cases an applicant wants to shift a stream course to stop erosion when no other option is available. Applicants sometime want to daylight and move a stream to improve the development potential of a site when the culverted stream crosses the middle of the site. However, in many cases the stream buffer cannot be provided along the entire new stream course because of lack of space on-site and/or the buffer would extend onto adjacent properties imposing new buffers on that adjacent property.

The current regulations in both Chapter 90 and Chapter 83 (shoreline regulations) may have an unintended consequence of discouraging or preventing the daylighting or relocation of streams because of lack of area for a buffer on-site or impacts on adjacent property. The current regulations say that if creation or expansion of a stream or its buffer affects another property, the other property owner must agree to it in writing. No one wants a new buffer or increased buffer on their property so the agreements do not get signed.

Staff recently contacted WDFW staff about these examples. Keith Folkerts, division head for SMA/GMA at WDFW responded that for this type of restoration action the buffer can “be determined at the site scale with room for agreeing upon what is a reasonable buffer under the circumstances.”

2. **Staff Recommendation:**

To encourage daylighting and provide flexibility for other stream modifications, have provisions that allow the stream buffer width to be established on a case by case basis provided that certain criteria are met, such as the action improves the overall function of the stream or reduces erosion. Also, the City should consult and coordinate the revised buffer width with WDFW and Department of Ecology in advance. Lastly, exempt surrounding properties from increased buffers due to the daylighting or other stream modifications on the subject property.

Does the Planning Commission concur with this approach?

VI. MAXIMUM DEVELOPMENT POTENTIAL (High Policy Issue)

The chart below lists the issues that are covered in this section of the memorandum. For each issue noted in the chart, the memo provides background, a summary of other jurisdiction’s regulations, and a staff recommendation.

Section Below	Issue	Current Regulations	Staff recommendation
A.	Clarify that after calculating maximum development potential, existing KMC 22.28 subdivision flexibility standards and cottage/carriage and two /three unit homes KZC regulations may increase the number of lots or density	KZC 90.135.1 is unclear about applicability of KMC 22.28, and other zoning regulations to increase density/or lots.	Clarify that lot size, lot averaging, small lot single family and Low Impact Development (LID) subdivision techniques and cottage, carriage and two/three unit homes regulations are available to achieve increased density or number of lots.
B.	Consider providing some relief from dimensional standards.	Chapter 90 does not allow deviation from dimensional standards.	Consider allowing: a. Minimum required yards <ul style="list-style-type: none"> • zero lot line from interior lot lines to achieve clustering between units, • front – 10 feet • Side and rear - 5 feet b. Minimum parking pad dimensions <ul style="list-style-type: none"> • width - 10 or 8.5 feet per required stall, • depth - 18.5 feet per required stall

			<p>c. Tandem parking where stalls are shared by the same dwelling unit</p>
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Current regulations establish a formula for Maximum Development Potential (MDP). MDP is a calculation that is intended to establish the maximum potential number of dwelling units that may be developed on a site that contains a wetland, stream, or their buffers. The idea is to preserve and protect the environmentally sensitive area by reducing residential density that would otherwise be allowed in the zoning district in which the subject property is located. In effect since 1998, this calculation is structured so that the buildable area and a percentage of the property that is in a required buffer is counted towards density, while none of sensitive area of the site is counted. Based on a sliding scale, the more of a site that is encumbered by a sensitive area buffer, the greater the dwelling unit reduction. The potential dwelling units must be accommodated on the buildable area of the site. The "buildable area" means the total area of the subject property minus sensitive areas and their buffers.

The MDP calculation was in response to developments that transferred 100% of development potential of the gross area of a site to the buildable portion of a site – resulting in developments out of character with the surrounding neighborhood. An example of this is Trillium Court, a PUD developed prior to 1998, shown below in an aerial photo from the City's GIS mapping. The surrounding lots are zoned RS 7.2 and developed under current provisions for calculating MDP.



Trillium Court

Once the base dwelling unit count is calculated with the MDP formula, existing Subdivision and Zoning regulations may still allow the number of units to be increased. Various subdivision flexibility standards in the Kirkland Municipal Code (KMC 22.28) may be applied to increase the potential number of lots. These include size, lot averaging, small lot single-family, and low impact development (LID). Too, cottage development regulations (KZC 113), and LID provisions (KZC 114) allow increased number of lots. All of these options would be reviewed concurrently with the platting process. These will continue to be available under the new regulations.

TWC gap analysis and staff have identified several issues associated with Maximum Development Potential to consider with this update, in recognition that wider buffers required with Ecology's BAS will encumber more of a site, resulting in increased development constraints.

A. Clarify that existing subdivision and zoning provisions are available to increase potential number of lots after calculating maximum development potential.

Issue: The purpose is to clarify that the base density established by the maximum development potential calculation may potentially be increased through existing subdivision and zoning provisions.

1. **Background:** As noted above, subdivision flexibility standards and cottage housing and LID zoning regulations may be used to increase residential density. To aid the users of Chapter 90, it would be helpful to be more explicit regarding the availability of these techniques, which theoretically could result in a higher unit count than the base density established by the MDP calculation. (These techniques are available for all subdivision proposals, regardless of whether the subject property contains a sensitive area or buffer).
2. **Staff recommendation:** *Continue current practice and clarify that these subdivision and zoning provisions are available after calculation of the Maximum Development Potential to add to the base density established by the MDP calculation.*

Does the Commission agree with the staff recommendation?

B. Consider Reduced Dimensional Standards

1. **Background:** In recognition of the greater buffer widths required with this update, some reductions of dimensional standards similar to those allowed with Low Impact Development (LID) could be considered (in addition to those discussed above) to offset the loss of development potential.

Staff has identified the following dimensional standards that could be considered for reduction:

- a. Minimum **required yards**

- zero lot line for interior lot lines to achieve clustering between units
 - front – 10 feet
 - Side and rear - 5 feet
 - b. Minimum **parking pad** dimensions
 - width - 8.5 feet per required stall
 - depth - 18.5 feet per required stall
 - c. **Tandem parking** where stalls are shared by the same dwelling unit
2. Other Jurisdictions: The jurisdictions below are split on allowing dimensional standard reductions outright.

Are reduced dimensional standards allowed outright on lots with sensitive areas or their buffers?	
<i>Jurisdiction</i>	
Kirkland	No
Bellevue	Yes, allows reduced setbacks outright by zone classification
Redmond	No
Kenmore	No
Woodinville	Yes, allows outright reduced lot sizes, building coverage, impervious surface, and lot width at street by zone classification.

3. **Staff recommendation**: *Consider allowing the reduced dimensions noted above.*

Does the Commission agree with the staff recommendation?

VII. OFF SITE MITIGATION (**High Policy Issue**)

A. Allow Off-site Advance Mitigation in the Kirkland Watershed:

Issue: The purpose of this discussion is to consider making available more off-site mitigation options.

1. Background:

Chapter 90 currently requires the location of compensatory mitigation to be either on the development site or off-site within the same City drainage basin where the development is proposed, but does not allow the mitigation outside of the City. Because on-site compensatory mitigation to mitigate for wetland and buffer area loss is often not feasible, and alternative off-site locations are seldom available within the drainage basin where the proposal is located, a new approach is needed. The existing regulations were based on old BAS and before third party fee-in-lieu and banking programs were made available.

At the February 25, 2016 meeting, staff introduced two types of third party off-site compensatory mitigation options; **in-lieu fee** and **mitigation banking**. The Planning Commission agreed with TWC recommendation to add provisions in the Chapter 90 update to allow for these off-site compensatory mitigation options for

public or private projects within the City's watershed pursuant to BAS. See pages 21-24 of the [staff memo](#) prepared for the February 25th Planning Commission study session for more background on wetland mitigation banks and in-lieu fee programs.

After talking with the City's Public Works and Parks departments, another option that should be considered is for Chapter 90 regulations to allow the City to **use or purchase City property** in the City's watershed that can be utilized as a repository for future required mitigation as a result of City parks, streets and utilities projects. This is termed **advanced mitigation**. Parks department staff notes that City owned Forbes Creek or Juanita Bay wetlands may be candidate locations where restoration, creation or enhancement mitigation projects could be considered.

Although similar to mitigation banking, advance mitigation is different in several ways. Most important, advance mitigation cannot be bought and sold by a third party. The permittee seeking mitigation debits must be the same entity that created the advance mitigation credits.

According to TWC, an advanced mitigation program is set up similar to a mitigation bank or in-lieu fee program but has less regulatory requirements that must be met to be certified by the interagency review team (Ecology, the Corps and other agencies). It is a simpler and less time intensive process to meet the regulatory standards for approval. The City could act on its own or through a third party to construct, maintain and monitor the mitigation but the **City is ultimately responsible for site performance**, unlike the in lieu fee or mitigation banking options. The mitigation must be implemented prior to the completion of the activity use or structure that is being mitigated - otherwise it is considered concurrent mitigation rather than advanced mitigation. Advanced Mitigation may result in reduced mitigation ratios because it reduces the risk of temporal loss. The advantage to the permittee would be that they could mitigate more impacts in a smaller area.

The most challenging aspects are to develop and present a clear approach on how mitigation will be calculated and accounted for over time. There are two approaches to measure appropriate amount of mitigation – credit/ debit or mitigation ratios. Ecology guidance would be used as a guide to develop such a program. Follow the link to the interagency guidance for advance mitigation: <https://fortress.wa.gov/ecy/publications/documents/1206015.pdf>. Ecology and the Corp regulate and track advance mitigation associated with direct impact to wetlands and streams. Therefore those agencies could administer the tracking and accounting for success for such projects. For projects only affecting buffers on the other hand, the City would be responsible for tracking and accounting success. The main potential drawback is the additional administration associated with tracking of credits and debits.

The advantage to the City of Advanced Mitigation over other off-site programs is that if the City owns a repository site, it avoids the ever increasing cost of land that is factored into the fee charged for in-lieu fee or mitigation banking programs. The challenge to the City is to allocate the funding for the mitigation project design, permitting and construction in advance of the need.

If the Advanced Mitigation option is allowed along with the in-lieu and mitigation banking, the City would have one more tool in its tool kit and could evaluate utilizing it along with other off-site mitigation options, as needed. This is a funding and budgeting issue for the City Council to consider as part of its land acquisition or capital improvement program.

The Planning Commission may also want to consider 1), whether other non-city public agencies or private developers should be able to set up their own Advanced Mitigation sites within the Kirkland watershed, and 2) whether Advanced Mitigation should be allowed for projects with only buffer impacts or with both buffer and sensitive areas

2. Other Jurisdictions: Out of the following, only Bellevue has codified advanced mitigation.

Allow advanced mitigation?	
<i>Jurisdiction</i>	
Kirkland	Not formally codified
Bellevue	Yes, parks projects only have used this provision.
Redmond	Not formally codified
Kenmore	Not formally codified
Woodinville	Not formally codified

3. **Staff Recommendation**: *Allow off-site Advanced Mitigation for public City projects both in sensitive areas and their buffers as an interim step before making it available to other applicants, in order to understand the complexity of administering this option.*

Does the Planning Commission concur with this approach?

B. Consider Developing a Policy Prioritizing Location and Type of Compensatory Mitigation:

Issue: The purpose of this discussion is to recognize that there is a preferred hierarchy of mitigation location and function.

1. Background: As noted in Ecology’s Wetland Mitigation in Washington State - Part 1: Agency Policies and Guidance publication, compensating for lost or degraded wetlands on-site is not always the best option. Preference should be given to a site that provides the highest ecological benefits, whether on-site, off-site, in-kind, or out of kind. Compensatory mitigation projects that contribute to the functioning

of a larger landscape are preferable to simply replacing acreage at the site of impact.

In-kind means that the same functions that are lost are replaced. For example, if a wetland serves a storm water detention function, the mitigation site should also serve a storm water detention function. If a wetland serves a habitat function, the replacement mitigation should be designed to also serve that habitat function.

According to TWC, off-site mitigation should be allowed dependent on the wetland type and rating. It is not as important to mitigate for degraded wetlands on-site as it is for highly functioning wetlands. Wetlands that serve high value habitat and hydrology functions should be mitigated for on-site or at least within our city limits because otherwise these functions could be permanently lost. Small urban wetlands provide significant water quality functions and may be particularly important for controlling flooding in highly urbanized environments, such as in Kirkland. Urban wetlands also may provide recreational and educational opportunities and aesthetic values. Prioritization recognizes that once these functions are gone they will be difficult to replace because of the high price of land in Kirkland.

Compensatory mitigation should be prioritized as follows:

- On-site in kind
- Off-site in City in-kind
- Off-site within watershed in-kind

Regardless of where or what type of mitigation is permitted, mitigation ratios are required. TWC notes that mitigation ratios are typically the same regardless of location or type. Buffer mitigation is 1:1 ratio, whereas sensitive area mitigation is based on wetland category.

2. Other Jurisdictions: Jurisdictions that have adopted Ecology’s most recent buffer width requirements all prioritize location and type of compensatory mitigation. Some do not allow out of jurisdiction mitigation in recognition of their goal of no net loss of wetland functions and values.

Provisions for order of preference and location of mitigation?	
<i>Jurisdiction</i>	
Kirkland	No
Bellevue	Yes
Redmond	Yes
Kenmore	Yes
Woodinville	Yes

3. **Staff Recommendation**: *Prioritize mitigation dependent on functions and location.*

Does the Planning Commission concur with this approach?

VIII. PUBLIC COMMENTS

Raedeke Associates submitted a letter addressing stream buffer widths at the March 24, 2016 meeting. The letter addresses the concept of variable width buffers for streams determined on a case by case basis. Staff has the following response to some of the comments made in the letter:

Variable buffer widths are supported by scientific literature as noted in the [Best Available Science](#) (BAS) report prepared for the City. However, they are rarely used for several reasons, and not commonly used by other local jurisdictions. Some jurisdictions do have an escalator clauses if a steep slope is located in a buffer so this would make the buffer variable under these circumstances.

For an applicant and the City, variable buffer widths can be costly to determine, sometimes contentious to agree upon, and unwieldy to administer. And for the applicant, they are unpredictable since the final buffer requirement is not known until after the lengthy, complex and costly process. Island County developed a site-specific approach to regulating wetlands, which incorporated the slope of the site, but they found it to be challenging to administer, and they are presently in the midst of a revision. Similarly, San Juan County developed a site-specific buffer approach to wetlands, but never implemented it as they defaulted to a more standard buffer width in their most recent code update.

Instead of having a variable buffer width at a site specific level, another option is at the basin level, such as by maintaining a similar approach to the existing Chapter 90 primary and secondary basins. The City is currently divided into seven primary basins and six secondary basins for determining buffer widths. The primary basins generally contain fish bearing streams while the secondary basins do not. A variable width by basin approach would add significant complexity to code development and interpretation, but would seem more manageable than a site-specific approach. This approach would take more time, research and coordination to come up with a varied buffer standard.

One goal of the new Chapter 90 is to simplify the regulations by moving away from the micro regulations by basin and use a city wide one basin approach based on just stream typing (fish bearing and non-fish bearing – year round or seasonal). Another goal is to have Chapter 90 KZC and Chapter 83 KZC (the shoreline regulations) be consistent. Chapter 83 uses the stream typing standard for the entire shoreline and does not break the shoreline down by basins.

IX. NEXT STEP

We will determine the next meeting date depending on the outcome of the Planning Commission meeting on April 28, 2016, and remaining issues, if any, that need research and further discussion. Staff will also discuss with the Planning Commission the concept of a joint meeting with the Houghton Community Council, potentially in May, for the Planning Commission to provide its direction on issues to the Houghton Community Council for input. The Houghton Community Council has not discussed the Chapter 90 code amendments since the joint meeting on January 28, 2016 in which staff provided background information.

Meanwhile, staff will begin writing the draft code based on the direction from the Planning Commission.

ATTACHMENTS:

1. Raedeke Associates public comment letter

TECHNICAL MEMORANDUM

March 24, 2016

To:	City of Kirkland Planning Commission
From:	William J. Taylor M.S., Aquatic Scientist Christopher Wright, Soil and Wetland Scientist Raedeke Associates, Inc.
RE:	Kirkland Stream Buffer Code Update Recommendations Current Science on Stream Buffer Policy

The following technical assessment of stream buffer best available science is intended to support a code modification that would recognize more appropriate stream buffer designations in highly urbanized environments to better attain the environmental goals of such environmental protection policies.

Buffer Widths for Urban Stream Buffers: The challenges and policy alternatives for urban environments

The Challenge in the Use of Fixed Width Buffers within Highly Urbanized Basins

Riparian buffer have been used as an environmental policy measure to protect stream shorelines, their receiving waters, and associated aquatic organisms for many decades. Stream buffers provide ecologically beneficial functions to mitigate land use impacts through filtering of land surface runoff to improve water quality, providing infiltration to support local ground water levels, providing shade for temperature control, and contributing organic inputs to the food web (Polyakov et al. 2005). However these benefits have been documented principally for large scale areas where the extended continuity of buffers both laterally and longitudinally provide continuous buffers that will have a landscape-scale cumulative and even synergistic effect on stream benefits, such as in large agricultural or silvicultural settings.

However, in highly developed urban settings the degree of impact to streams becomes acute and extensive through conversion of permeable soil surface to impervious surfaces (asphalt, concrete, and roofs). These land surface conversions not only collect

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contaminated storm drainage and deliver it directly to stream channels resulting in channel erosion and incision and exposure to pollutants, but vegetative buffers are either eliminated where the stream is fully piped or greatly reduced where channels do remain. The combined effects of hydrologic change, runoff of toxic substances, and the loss of riparian cover among other urban environment impacts all become a compounded and even synergistic set of impacts to urban streams resulting in what is now called the “urban stream syndrome” (Walsh et al. 2005).

In an attempt to reverse these impacts, stream buffers can be applied as one element of a stream recovery or protection measure in a multifaceted prescription across the basin (along with other commonly used measures such as green stormwater management practices, channel bed control, culvert daylighting, and eliminating sources of toxic substance). However, the overall success of these combined prescriptions must also be on a scale “that match the scale of the problem” to be successful (Hughes et al. 2014a). Even with potential extensive application on a basin-wide scale, the implementation of such broad scale measures can become economically untenable (Polyakov et al. 2005).

Within heavily urbanized stream basins, then, application of standardized uniform stream buffer widths become a fragmented attempt to apply the known benefits of buffers to small localized conditions where the added benefits pale in comparison to the cumulative combination of multiple impacts continuing from upstream. Wahl et al. (2013) conclude from their findings in Western Washington that patchy riparian forests did not improve stream conditions in heavily degraded streams, and:

“These patterns are consistent with results from other studies where stream community composition was best predicted by land use at larger spatial scales and add to the growing literature suggesting that small-scale riparian restoration can be inadequate to improve biotic conditions in heavily impacted streams.”

Effectiveness of Fixed Buffer Widths versus Variable Buffer Widths

The intended beneficial feature of riparian buffers is to allow upland surface water runoff to pass through a vegetated and permeable soil surface before reaching the stream channel, thereby using the processes of filtration and infiltration to better control instream flow regimes, and reduce contaminated runoff entering the channel. The use of buffers to mitigate water quantity and quality impacts of runoff to stream habitats is highly variable due to the common concentration of flow that short circuits and bypasses the filtering and infiltrating processes of riparian soils (Polyakov et al. 2005).

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The process of bypassing riparian buffers can predictably be more acute in urban environments where various small scale impervious areas (e.g. lawns, driveways, and roof downspouts) are isolated from each other yet discharge more or less directly to a stream, resulting in such localized concentrated flows. Much of these localized impervious flows are directed to storm drainage systems in the first place, which are in fact designed to bypass intervening ground surfaces and deliver the flows directly to the stream. The result can easily be very little of local runoff effectively being treated by riparian buffers.

As an alternative to the use of increased buffer widths that may not function effectively as a result of localized concentrated flows, green stormwater treatment designs for urban development purposefully directs localized stormwater runoff from residential and commercial development to dispersed infiltration features to facilitate infiltration and reduced runoff volumes. Municipalities in the Puget Sound Basin are now required to implement such stormwater management techniques for new and redevelopment, resulting in a more direct mitigation of this primary source of impact to urban streams. Essentially, direct reduction of the source of flows through infiltration, retention and detention is more effective than depending on flows to be uniformly passed through buffers.

As yet another riparian buffer policy approach, “precision conservation” takes into account “spatial and temporal variability across landscapes” when prescribing conservation measures such as buffers, and take into account local landscape and hydrologic conditions that would be served by wider or narrower buffer widths (Berry et al. 2003). This approach would prescribe variable buffer widths that are targeted to protect areas where the buffers would have greater effect on the resulting local and downstream environments of biological significance, bringing to bear information using remote sensing and GIS tools.

The Watershed Company (2016) report on best available science to the City of Kirkland recognize much of the best available science comes from non-urbanized environments, and consequently, the importance of local municipal conditions when applying best available science:

“The review of science acknowledges several limitations of applying the results of primary scientific literature to policy decisions. In particular, it is important to recognize the setting of scientific investigations, as management recommendations differ between undeveloped forested environments and highly developed urban areas. For example, in urban areas, it is important to account for the presence of engineering and public works projects, such as surface water detention facilities that may alter hydraulic conditions and sediment transport, or stormwater routing,

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which may cause runoff to bypass riparian areas altogether. Another consideration when evaluating primary literature is that scientific references commonly evaluate the effects of a single set of conditions, or in some cases several specific conditions. Depending on the specific conditions and function tested, outcomes may vary. Thus, although stream and riparian conservation measures should be based in BAS, some level of policy interpretation must be made by each local jurisdiction based on local conditions.”

Washington State Department of Ecology (2013) has also recognized the need for variable buffer widths as related to wetland guidance rather than stream buffers, but the principals behind the need for variable buffers remain the same:

“Fixed-width buffers may not adequately address the issues of habitat fragmentation and population dynamics. Several researchers have recommended a more flexible approach that allows buffer widths to be varied depending on site-specific conditions.

Update: A request for a more flexible approach is a common theme among recent articles (42, 62, 67, 95). The research reinforces the fact that buffers and fragmentation are only two of many variables that affect the dynamics of wildlife populations. Other factors that have been found to affect the survival of wetland-dependent species are surrounding land use, the structure of the plant community, and the intensity of human disturbance. If buffers are to be used to protect the water quality in wetlands, the factors that need to be considered are slope, soil chemistry, soil structure and the plant community.”

Booth (2005) notes “changes in flow regimes, in particular, are an important pathway by which urbanization influences biotic conditions. Precision (variable) riparian buffers would especially prioritize targeting hydrologic source areas that are not otherwise controlled (Qui 2009). It would also be consistent with the priority actions for urban rehabilitation recommended in Hughes et al. (2014a) to:

“(1) protect upstream high-quality catchments and habitats and (2) reestablish ecosystems processes and connectivity in the altered places (especially water quality and hydrological regime), before attempting to rehabilitate specific sites lower in the watershed.”

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This is in contrast to cases where:

“well-meaning mitigation projects are implemented at the site or reach scale in streams, lakes, and rivers when many of the limiting factors are occurring at the watershed scale.” (Hughes et al. 2014a)

This latter comment would apply equally to implementation of ineffective or poorly targeted uniform buffer widths.

Variable buffer widths would also help target longitudinal buffer continuity in higher priority basins where existing buffers may have greater existing continuity. The Watershed Company (2014) recognized:

“Longitudinal continuity of buffers along streams is also an important factor determining the effectiveness of buffers at improving channel conditions. Riparian continuity is correlated with abundance and diversity of sensitive invertebrates (Wooster and DeBano 2006) and metrics of physical stream conditions (McBride and Booth 2005). On the other hand, fragmented riparian zones may not be sufficient to improve degraded instream habitat conditions.” McBride and Booth (2005) likewise note “physical conditions can improve downstream from degraded stream reaches if the riparian zone is substantially forested and devoid of road crossings.”

Variable buffer widths are also in line with concentrating development as a means of reducing impervious area at the catchment scale as recommended by Hughes et al. (2014b). This results in reducing development pressure in prioritized basins where the existing degree of impact is currently more manageable. Allowing reduced buffer widths where existing basins are highly impacted by existing development infrastructures would, to that degree of concentrated development, reduce sprawl in underdeveloped basins.

The use of variable buffer widths indicates there are locations in a stream length where the local landscape conditions and receiving water will benefit from a wider buffer width, and other areas where increased buffer widths will have a highly diminishing benefit and the receiving waters will equally not benefit substantially from increased buffer widths. As noted by McBride and Booth (2005):

“policies and management strategies for protecting stream integrity in developing areas can be improved. With more robust knowledge the landscapes can be modified to preserve those streams or stream segments

that still function while targeting rehabilitation efforts to those degraded portions of streams that have realistic chances for improvement.”

The application of fixed, one size fits all, buffers to streams within an urban environment fails to meet the goal of environmental protection, circumvents the objectives of sustainable growth management, and increases financial burdens on citizens without providing the improvement to streams that they are intended to provide.

The application of precise, site specific buffers as well as appropriately designed and implemented stormwater controls would provide greater environmental protection and habitat improvement than the proposed code changes will.

Raedeke Associates, Inc. would welcome the opportunity to meet with the City of Kirkland staff and their consultants to discuss ways to implement a variable buffer width policy.

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