DEPARTMENT OF COMMUNITY
& ECONOMIC DEVELOPMENT

M E M O R A N D U M

DATE:	February 4, 2015
TO:	Kevin Poole, Planning Commission Chair Members of the Renton Planning Commission
FROM:	Angie Mathias, Senior Planner
SUBJECT:	**Comprehensive Plan Update – Critical Areas Update**

ISSUE

The City's regulations regarding Critical Areas are required to be amended. Should they be amended as recommended in order to meet Best Available Science?

RECOMMENDATION

Review and revisions of the Critical Areas Ordinance is ongoing. Additionally, the City anticipates there will be a revised recommendation, in particular to the Wetlands and Frequently Flooded Areas sections. At this time, the recommendation is to continue review and revisions.

BACKGROUND

As part of the mandatory update to the City's Comprehensive Plan, the City is required to ensure that the regulations regarding the protection of critical areas meet the Best Available Science (BAS). Washington Administrative Code states that "*when feasible, counties and cities should consult with a qualified scientific expert or team of qualified scientific experts to identify scientific information, determine the best available science, and assess its applicability to the relevant critical areas*." To that end, the City has contracted with Environmental Science Associates (ESA) to facilitate the update to the Critical Areas regulations. A City interdepartmental team interviewed and selected the firm for the update, provided direction and suggestions to identify the goals and objectives for the update, and the team continues to review and refine the draft ordinance. The attached draft includes amendments recommended by ESA to ensure BAS, as well as, structural edits drafted by Renton Staff.

DISCUSSION

There are six types of critical areas that that are covered in the Renton Critical Areas Regulations; one critical area is comprised of specific types of hazards. They are as follows:

- Critical aquifer recharge areas
- Frequently flooded areas
- Habitat conservation areas
- Streams and lakes

- Wetlands
- Geologically hazardous areas:
  - Steep slopes
  - Landslide
  - Erosion
  - Seismic
  - Coal mine
  - Volcanic

Most recommended amendments to the critical areas regulations are relatively minor in nature, however there are two particular critical areas where the recommendations to achieve BAS are more significant. Both of them relate to water, Streams and Wetlands.

Streams

The existing City classification of streams includes 5 classes, the proposed stream classifications would include four types based on the State's Permanent Water Typing System. Most buffers remain the same; however, Class 2 streams, which are proposed to become Type F, are proposed to be increased 15 feet. The existing and proposed stream classifications and buffers are indicated in the following table:

Existing Standards		**Proposed Standards**	
Stream Class	**Standard Buffer**	**Stream Class**	**Standard Buffer**
Class 1	Shorelines of the State regulated under SMP	**Type S**	Shorelines of the State regulated under SMP
Class 2	100 feet	**Type F**	115 feet
Class 3	75 feet	**Type Np**	75 feet
Class 4	35 feet	**Type Ns**	35 feet
Class 5	Exempt from Critical Areas Regulations	n/a	

Wetlands

The City's current wetland regulations include three classifications in the wetland rating system. The proposed revisions include adoption of the State Department of Ecology's four classifications in the rating system, which is consistent with what was adopted under the City's Shoreline Master Program. The proposed system also represents a shift to variability in the buffer requirements based on the quality of the function of the wetland: low, moderate, or high wildlife function. The existing system and buffers, as well as, the proposed system and buffers are indicated in the following table:

Existing Standards		Proposed Standards			
Wetland Category	**Standard Buffer**	**Wetland Category**	**Standard Buffer**		
n/a			**Low wildlife function (<20 points)**	**Moderate wildlife function (20-28 points)**	**High wildlife function (>28 points)**
Category I	100 feet	**Category I**	125 feet	150 feet	225 feet
Category II	50 feet	**Category II**	100 feet	150 feet	225 feet
Category III	25 feet	**Category III**	75 feet	125 feet	150 feet
n/a		**Category IV**	50 feet	50 feet	50 feet

The proposed standards reflect the Department of Ecology's recommendations regarding wetland regulations. As indicated in the attached November 20, 2014 memo from ESA regarding wetland buffers, there are many options for this update. The City also anticipates an additional memo regarding wetlands with an approach that reflects the existing conditions that are more specific to Renton. That memo may result in revisions to the recommended buffers.

Additionally, the City intends to amend the draft to include elements of all three of the options presented in the ESA memo. Specifically, the City seeks to establish a recommendation that presents a more tiered approach. First, the intensity of the land use would be determined. Examples of the types of land uses and their levels of impact are indicated in the table below, as shown in the ESA memo. Because, as the memo states "different buffer widths are specified for different land use intensities because wetland science indicates that not all land uses have the same level of impact (Granger et al., 2005)". Therefore, the low and moderate intensity land uses would be allowed lower buffer requirements.

Level of Impact from Proposed Change in Land Use	Types of Land Use Based on Common Zoning Designations *
Low	• Forestry (cutting of trees only) • Low-intensity open space (hiking, bird-watching, preservation of natural resources, etc.) • Unpaved trails • Utility corridor without a maintenance road and little or no vegetation management
Moderate	• Residential (1 unit/acre or less) • Moderate-intensity open space (parks with biking, jogging, etc.) • Conversion to moderate-intensity agriculture (orchards, hay fields, etc.)

	• Paved trails • Building of logging roads • Utility corridor or right-of-way shared by several utilities and including access/maintenance road
High	• Commercial • Urban • Industrial • Institutional • Retail sales • Residential (more than 1 unit/acre) • Conversion to high-intensity agriculture (dairies, nurseries, greenhouses, growing and harvesting crops requiring annual tilling and raising and maintaining animals, etc.) • High-intensity recreation (golf courses, ball fields, etc.) • Hobby farms
* Local governments are encouraged to land-use designations for zoning that are consistent with these examples.	

The second tier would be for high intensity land uses where the standard buffers would apply, similar to what is indicated as proposed buffers. Finally, the City would like to adopt a provision whereby an applicant can present scientific analysis that shows that the conditions of the wetland and the associated buffers merit a different standard than what is required in code.

Frequently Flooded Areas

Prompted by a lawsuit, the National Marine Fisheries Service released a biological opinion that the FEMA's National Flood Insurance Program (NFIP) was having detrimental effect on habitat for some endangered species in Puget Sound. The biological opinion found that the minimum requirements of the NFIP jeopardized the continued existence of Puget Sound Chinook salmon, Puget Sound steelhead, Hood Canal summer-run chum salmon, and Southern Resident killer whales. In order for properties in the floodplain in Renton to be able to obtain Federal flood insurance, the City needs to regulate development according to specific standards and those standards need to be revised so that new development will comply. Those recommended amendments are not a part of the current draft, but are anticipated soon.

Other Substantive Amendments

Attached is a table that summarizes the substantive amendments by critical area type. There are no substantive for three of critical area types and as indicated above, critical areas that are related to water have the most substantive proposed amendments.

ESA

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memorandum

date November 20, 2014

to Angie Mathias, City of Renton
Chip Vincent, City of Renton

from Ilon Logan and Margaret Clancy

subject City of Renton CAO Update: Wetland Buffers

The City of Renton (City) is in the process of updating its Comprehensive Plan and Critical Areas Ordinance (CAO, Renton Municipal Code [RMC] 4-3-050) in accordance with the requirements of the Growth Management Act (GMA) (RCW 36.70A). The GMA requires jurisdictions to consider best available science in the development of critical areas policies and regulations. In 2005, the City reviewed the best available science and updated the CAO to comply with the GMA. More recently, the City updated its Shoreline Master Program (SMP), which was approved by the State Department of Ecology (Ecology) in 2011. Per the City's request, ESA reviewed the City's CAO for consistency with the current scientific literature and applicable regulatory agency guidance and provided summary of its findings in a memo dated October 21, 2013). This memo addresses the subject of wetland protections, particularly wetland buffers, and has also been provided at the City's request.

Wetland Rating System

ESA's review of the City's wetland regulations found that the current three-tier wetland rating system is outdated and not consistent with the Ecology rating system, which is considered best available science (Hruby, 2004). We also observed that the standard wetland buffers in the CAO are no longer supported by best available science and the CAO contains allowances for buffer reduction and the ability to reduce buffers further under a variance.

To improve the City's wetland protections to be consistent with best available science, ESA recommended that the City adopt the state wetland rating system and thus use the Category I, II, III, and IV wetland classes defined by Ecology (Hruby, 2004). Ecology's four-tier system rates wetland functions and values (hydrologic, water quality, and wildlife habitat) in a systematic way that is generally understood by qualified individuals in the region. The rating system is supported by a manual and Ecology provides training and certification for users of the rating system. The City adopted the use of this rating system for wetlands within shoreline jurisdiction as part of its recent SMP update.

Based on recent communications with you, we understand that the City intends to adopt the Ecology rating system as part of this CAO update per our recommendation. The following sections focus specifically on wetland buffers and summarize relevant and current science on wetland buffer widths, alternatives for determining buffer widths, how buffers are currently determined within the City's jurisdiction, and provide a set of options for the City to consider during this CAO update.

Purpose of Wetland Buffers

Wetland buffers are vegetated upland areas immediately adjacent to wetlands. These areas are set aside to protect the functions of the adjacent wetland. The importance and effectiveness of buffers to protect wetland functions and values has been well established in the scientific literature by Castelle et al. (19929), McMillian (2000), and Sheldon et al. (2005). For example, buffers protect wetland water quality by retaining and removing sediments, nutrients, pathogens, and other pollutants that may be present in runoff. The following sections summarize available science and buffer width recommendations for specific wetland functions.

Scientific Review

Scientific information shows the buffer widths needed to protect wetland functions vary depending upon a variety of factors, including but not limited to the vegetative condition of the buffer, water flow path, slope, and soil type. Studies also indicate that effective buffer widths can vary according to the specific wetland function to be protected, such as sediment removal, water quality improvement, and wildlife habitat.

Because of the complexities in the relationships between slope, soils, vegetation, and other factors, buffer recommendations in the scientific literature are often stated as a range of widths required to achieve a certain level of effectiveness for a given buffer function. Effective buffer width ranges for key buffer functions from the reviewed scientific literature are summarized in Table 1, and explained further below.

Table 1. Buffer width recommendations by ecological function (summarized from Sheldon et al. 2005).

Buffer Function	Effective Buffer Width Range – feet (from reviewed literature)	Minimum Buffer Recommendations and Sources
Fine Sediment Removal	30 - 164	Desbonnet et al. (1994) [80% at 82 feet] Lynch et al. (1985) [75-80% at 98 feet] McElfish et al. (2008) [30-100 feet] Norman (1996) [49.9 -164 feet]
Removing nutrients: Nitrogen	50 - 164	Mayer et al. (2005) [75% at 92 feet] Vidon and Hill (2007) [66 feet] Wenger (1999) [50 to 100 feet]
Removing nutrients: Phosphorus	30 - 90	Dillaha (1993) [78% at 30 feet] Wenger (1999) [45 to 90 feet]
Removing Toxics and Pathogens	49 - 115	Neary et al. (1993) [49 feet for pesticides] Wenger (1999) [50 feet minimum] Young et al (1980) [115 feet]
Protecting Wetland Habitat and Providing Adjacent Wildlife Habitat	35 - 328	Castelle et al. (1992) [100-200 feet] Granger et al. (2005) [50-300 feet] Hawes and Smith (2001) [33-164 feet] McMillan (2000) [98-328 feet] Wenger (1999) [35-100 feet]
Screening Adjacent	49 - 164	Cooke (1992) [50 feet]

Buffer Function	Effective Buffer Width Range – feet (from reviewed literature)	Minimum Buffer Recommendations and Sources
Disturbance		Groffman et al (1991) [105 feet] Shisler et al. (1987) [49-98 feet for low intensity, 98-164 feet for high intensity]
Maintaining Habitat Connectivity	33 - 1,000+	ELI (2003) [33-1,000+ feet, depending on species] Hawes and Smith (2001) [33-164 feet]

Fine Sediment Removal

The vegetated buffer strip width required to remove sediments is highly variable and is based on a number of factors, including sediment size (e.g., sand, silt or clay), slope, soil infiltration, and buffer vegetation class (Wenger, 1999). Regardless of these factors, a high percentage of sediment removal typically occurs within the first 15 to 30 feet of the buffer; with larger buffers provide more consistent, long-term control of sediment (McElfish, 2008). In general, progressively wider buffers are also required to trap smaller sediments. According to Norman (1996), the required width ranges from 9.8 feet for removal of sand-sized particles to 49.9 feet for silt-sized, and 400 feet for clay sized particles (cited in Sheldon et al., 2005). In addition, steep slopes and compacted areas may require relatively larger buffers (Wenger, 1999).

Nitrogen Removal

The reviewed scientific and technical information for nitrogen removal lists effective buffer widths that vary from 50 feet (Wenger, 1999) to 164 feet (Mayer et al., 2007). A primary factor explaining this variability is type of water flow containing the dissolved nitrogen. The majority of transported nitrogen moves into wetland buffers through sub-surface flow. Vegetated buffers are generally efficient at removing sub-surface nitrogen, with 75% effectiveness predicted at 92 feet (Mayer et al., 2005). Removal of nitrogen from surface flow is significantly less effective, with 75% effectiveness reported at 389 feet. Nitrogen can also enter a buffer attached to sediments. This particulate nitrogen is removed when sediments are filtered out by buffer vegetation. Overall, Mayer suggests that relatively narrow buffers (less than 49 feet) can be effective at reducing particulate nitrogen concentrations, but larger buffers more consistently removed significant portions of nitrogen (Mayer et al., 2007). The buffer widths needed to achieve 50%, 75% and 90% removal were reported as 10, 92, and 367 feet, respectively (Mayer et al., 2005).

In a similar review of available literature, Wenger notes a minimum buffer width of 50 feet for nitrogen removal, but suggests that buffers of 100 feet or more will provide higher levels of nitrogen removal (Wenger, 1999). In addition to flow type and buffer width, other factors influencing buffer efficacy include buffer soil and vegetation conditions. Optimal conditions for nitrogen removal are met in soils with high levels of organic carbon, saturated soil, extended contact with the water table, low oxygen conditions, and high incidence of live plant roots (Correll, 1997). All of these factors will affect the buffer width required to achieve desired nitrogen removal.

Phosphorus Removal

Most phosphorus is delivered to wetland buffers attached to sediment. Therefore, buffer widths sufficient to remove sediments should also remove phosphorus (Wenger, 1999). Dilaha (1993) reported 61% removal in a 15-foot-wide buffer and 79% removal in a 30-foot-wide buffer. Desbonnet (1994) reported similar results: 30 feet removed 60% of the phosphorus, but 279 feet was required to remove 80% of this nutrient. This discrepancy may be caused by a higher percentage of dissolved phosphorus (vs. adsorbed to sediment) in the studies reported by Desbonnet. In a synthesis of prior literature, Wenger (1999) recommends buffers from 49.5 to 99 feet, provided

that the buffer width is increased with increasing slope or higher likelihood of phosphorus inputs from animal waste, fertilization, and other high-nutrient activities.

Toxics and Pathogens Removal

Movement of toxics and pathogens through wetland buffers is not as well understood as that of nitrogen and phosphorus. Reviewers generally accept buffer strips of 50 feet to be the minimum required distance to prevent pesticides from affecting water quality. Neary et al. (1993) found that riparian buffer strips of 50 feet or more prevented pesticide residues from exceeding water quality standards (cited in Wenger, 1999). Bacteria from feed lots generally were reduced to acceptable levels for water quality with 115-foot-wide buffers (Young et al., 1980; cited by Sheldon et al., 2005).

Protecting Wetland Wildlife Habitat

Wetlands support a variety of wildlife species and the types of buffers needed to protect these species varies by species and adjacent land use. Buffers can provide ecologically rich and diverse transition zones between aquatic and terrestrial habitats, screen wetland habitat from adjacent human development, and provide conductivity between otherwise isolated habitat areas (Sheldon at el. 2005). Synthesis documents of scientific literature note that a range of upland habitat buffer dimensions may be appropriate depending on site considerations, landscape context, and targeted species. For example, in summarizing the literature he reviewed on buffer effectiveness, McMillan (2000) concluded, "an appropriate buffer to maintain wildlife habitat functions for all but the most highly degraded wetlands would be comprised of native tree and or shrub vegetation and range from 30 to 100 m (98 to 328 feet)." Table 2 shows wildlife groups and their associated buffer requirements from the literature.

Table 2. Buffer requirements for wildlife (summarized from Sheldon et al. 2005).

Species	Buffer Width (feet)	Reference
All Species Noted (Western WA)	197 - 295	Castelle et al. (1992)
All species of reptiles, amphibians, birds, and mammals (majority of literature cited recommends buffer width of 330 feet).	98 (minimum) 330 (majority recommendation)	Fischer et al. (2000)
Most wildlife needs	197 - 328	Groffman et al. (1991)
Most wildlife needs	197	Howard and Allen (1989)
Most wildlife needs	98 – 328	McMillan (2000)
All bird species richness in Puget Sound lowland wetlands	1,680	Richter and Azous (2001)

Screening Adjacent Disturbance

Required buffer widths to screen human disturbances primarily depend on the intensity of land use. Approximately 105 feet of dense, forested vegetation is required to reduce disturbance from a high-intensity use (e.g., commercial area) back to background noise (Groffman et al., 1991). Other high intensity uses may require buffers as wide as 164 feet to reduce wildlife impacts. Lower intensity land use can often be effectively screened with buffers ranging from 49 to 98 feet (Shisler et al., 1997). Analysis of wetland sites in western Washington concluded that buffers smaller than 50 feet are generally ineffective at screening wildlife from human disturbance (Cooke, 1992, as cited in Castelle et al., 1992).

Maintaining Habitat Connectivity

The most recent ecological research refers to buffers that provide critical life requirements to wetland species as "core habitats" (Hruby, 2013). These core habitats are generally larger than traditional buffers, as wildlife use adjacent uplands to fulfill many of their life needs. Many amphibians and wetland-dependent birds, in particular, require core habitats that extend well beyond the traditional context of a wetland buffer. The most important factor in this core habitat may not be width, however, as vegetation, adjacent land use, and landscape setting play key roles in determining the level of protection provided to these species (Hruby, 2013). The *Planner's Guide to Wetland Buffers for Local Governments* (ELI, 2008) recommends buffers of 100 to 1,000 feet for wildlife, noting the importance of native vegetation, habitat complexity, and the maintenance of relatively large, intact habitat areas.

Determining Buffer Widths

Buffers are one of the most effective mechanisms for protecting wetlands and therefore are an important regulatory tool. Several factors affect the ability of buffers to provide the functions discussed above, including not only the width of the buffer but its slope, type of vegetation, presence of sheet flow vs. concentrated flow, and other factors.

Ideally, from a purely scientific perspective, every wetland would have a custom buffer that is tailor-made to protect it given its landscape positon, condition, habitat value, sensitivity to impact, etc. However, site-specific buffer approaches are not very practical, predictable or enforceable. Local jurisdictions require a buffer system that is easy to administer, which is what Ecology promulgates and what many locals have adopted.

The Ecology document *Guidance for Protecting and Managing Wetlands in Washington State* (Granger et al. 2005) presents three alternative approaches for local jurisdictions to protect wetland functions using buffers in western Washington. Ecology's recommendations were derived from their evaluation of the best available science as described in *Wetlands in Washington - Volume 1: A Synthesis of the Science*, Publication #05-06-006 (Sheldon et al., 2005). The three approaches are based on the use of the state's four category wetland rating system and are:

Ecology Alternative 1 Width based only on wetland category (Category I – IV).

Ecology Alternative 2 Width based on wetland category and the intensity of impacts from proposed changes in land use.

Ecology Alternative 3 Width based on wetland category, intensity of impacts, and wetland functions or special characteristics. This alternative has two options for determining the widths of buffers when they are based on the score for habitat.

Buffer Alternative 1 allows for a prescriptive approach that provides City staff, applicants, and other users of the CAO a predictable and clear standard that requires minimal field or office analysis, interpretation, or documentation beyond what is required to complete the Ecology wetland rating form. This approach would be easy to implement and enforce, particularly for jurisdictions such as Renton that have limited capacity to make ecological determinations. Prescriptive buffers protect wetland functions and values as long as the buffer widths meet or exceed widths recommended by best available science. The major drawback of the prescriptive approach is that provides minimal flexibility to respond to different development scenarios or site conditions. However, provisions such as buffer reduction and buffer averaging do achieve some flexibility and Renton's current CAO contains these provisions.

Buffer Alternatives 2 and 3 reflect flexible and site-specific approaches to determining buffer widths. These alternatives are based on the concept that not all proposed land use changes have the same level of impact. These

approaches require the City/applicant to identify the type of land use adjacent to the proposed development and identify other factors that reflect the sensitivity of the wetland to impacts and then determine buffer widths. Alternative 3 specifically takes into consideration the wildlife habitat score, which is part of the Ecology rating system. These latter approaches are fairly complex and require substantial staff capacity to implement successfully.

Table 3 summarizes the ranges of buffer widths that Ecology recommends for each of these alternatives. These buffer widths are considered consistent with best available science.

Table 3. Ecology recommendations for buffer widths in Western Washington (Granger et al. 2005)

	Buffer Alternative and Width Ranges (feet)		
	Alternative 1– Width based on wetland category only	**Alternative 2 – Width based on wetland category plus land use intensity**	**Alternative 3 – Width based on wetland category, land use intensity, functions scores, unique wetland types**
Category IV	50	25-50	25-50
Category III	150	75-150	40-150
Category II	300	150-300	50-300
Category I	300	150-300	50-300

Employing the approaches under Alternatives 2 and 3 requires determining the type of adjacent land use. Different buffer widths are specified for different land use intensities because wetland science indicates that not all land uses have the same level of impact (Granger et al., 2005). For example, a new residence on a 1-acre parcel of land near a wetland is expected to have a smaller impact to wetland functions than 10-lot subdivision on the same parcel. Overall, Alternative 3 is the most consistent with the recommendations of several scientists to apply a buffer width system that incorporates site-specific factors rather than using fixed buffer widths (McMillan 2000, Todd 2000, Sheldon et al. 2005). King County adopted the Alterative 3 approach in their last Critical Areas Ordinance update and King County Code 21A.24.325 provides an example of how this alternative could be implemented, available at: http://www.kingcounty.gov/council/legislation/kc_code.aspx.

Table 4 lists the types of land uses that Ecology indicates can result in high, moderate, and low levels of impacts to adjacent wetlands.

Table 4. Types of land uses that can result in high, moderate, and low impacts (Granger et al. 2005).

Land Use Intensity	Types of Land Uses
Low	• Forestry (cutting of trees only) • Low-intensity open space (hiking, bird-watching, preservation of natural resources, etc.) • Unpaved trails • Utility corridor without a maintenance road and little or no vegetation management
Moderate	• Residential (1 unit/acre or less) • Moderate-intensity open space (parks with biking, jogging, etc.)

	• Conservation to moderate-intensity agriculture (orchard, hay fields, etc.) • Paved trails • Building of logging roads • Utility corridor or right-of-way shared by several utilities and including access/maintenance road
High	• Commercial • Urban • Industrial • Institutional • Retail sales • Residential (more than 1 unit/acre) • Conservation to high-intensity agriculture (dairies, nurseries, greenhouses, growing and harvesting crops requiring annual tilling and raising and maintaining animals, etc.) • High-intensity recreation (golf courses, ball fields, etc.) • Hobby farms

In an urbanized jurisdictions such as Renton, the majority of land uses and zoning designations fall into the high intensity category of level of impact. There are a few areas that would be considered moderate, such as the pockets of residential zoning that is one unit per acre or less and moderate-intensity open space. Thus, we see the land use intensity approach to buffer widths as less relevant and useful for Renton compared to cities or counties with areas of undeveloped land, agriculture and/or forestry activities.

Lastly, Ecology acknowledges that the buffer width recommendations are general and may be either too restrictive or not protective enough, depending upon site and landscape-level conditions (Granger et al. 2005). In 2013, Ecology published an update to the 2005 synthesis document, which revisits the conclusions and key points concerning wetland buffers in light of new scientific information that was published between 2003 and 2012. However, the update document (Hruby 2013) does not change the agency recommendations regarding wetland buffer widths cited above.

Existing Renton Wetland Buffers

Currently, wetland buffers within the City (outside of shoreline jurisdiction) are regulated by Title IV of the Renton Municipal Code (RMC). RMC 4-3-050 M6 lists the standard wetland buffers for each wetland category, as shown in Table 5.

Table 5. Existing wetland buffer widths in Renton CAO (outside of shoreline jurisdiction) (RMC 4-3-050 M6).

Wetland Category	Required Buffer (feet)
Category 3	25
Category 2	50
Category 1	100

In November 2011, the City's revised SMP was approved. Revisions to the SMP included adoption of the Ecology wetland rating system for use on wetlands within shoreline jurisdiction and a different set of buffer widths (presented in Table 6). Similar to Ecology's Alternatives 2 and 3, the new buffers for wetlands in shoreline jurisdiction vary depending on the wetland category and wildlife habitat score. Unlike Ecology's Alternative 2, the proposed buffer requirements are not based on land use intensities. This approach (i.e., category plus habitat score) is used in the sample wetland ordinance in *Wetlands and CAO Updates: Guidance for Small Cities Western Washington Version* Publication 10-06-002 (Bunten et al. 2012).

Table 6. Existing wetland buffer widths in Renton SMP (within shoreline jurisdiction) (RMC 4-3-090D.2.6).

	Required Buffer Width (feet)		
Wetland Category	**Low wildlife function (less than 20 points)**	**Moderate wildlife function (20 – 28 points)**	**High wildlife function (29 or more points)**
IV	50	50	50[1]
III	75	125	150[1]
II	100	150	225
I	125	150	225

[1]Habitat scores over 26 points would be very rare for Category III wetlands and almost impossible for Category IV wetlands that have a total rating of 30 or less.

Options for CAO Update

The City's current wetland buffers were adopted prior to the release of a significant source of best of available science in 2005 (Granger et al. 2005 and Sheldon et al. 2005). These documents synthesized a large amount of scientific information on wetland protection and management. This section presents three options for revising the City's approach to wetland buffers in consideration of the current best available science.

Adopt SMP buffers

The first option is for the City to adopt the same approach and required widths as recently developed for the SMP (Table 6). This option has the following features:

- Buffer scheme is *not* one of the three buffer alternatives presented by Ecology, but is a hybrid approach of Alternatives 2 and 3 and is the suggested sample ordinance for small cities in Western Washington (Bunten et al. 2012). Although Renton is not a small city, the approach reflects best available science and would be appropriate.
- Buffer widths are based on wetland function and directly incorporate the wildlife score from the Ecology rating form. They do not consider land use intensity, but since Renton is a mostly urbanized jurisdiction and the majority of land uses and zoning designations fall into the high intensity category of level of impact, this is not important as mentioned previously.
- Buffer widths are within the range of widths of the scientific literature, but do not go as high (225 feet is maximum).
- Justification for the buffer scheme and widths is based on upon an analysis of the shoreline inventory and characterization (wetlands within shoreline jurisdiction), future build-out in the shoreline area, and evaluation of cumulative impacts.

- Buffer scheme and widths have been approved by Ecology.
- No additional analyses of wetland conditions, current land uses, or future build would need to be conducted if City chooses this option.
- Consistency for staff and applicants for projects that occur within and outside shoreline jurisdiction.

Adopt Ecology "Alternative 1" approach and minimum BAS buffers

A second option is to adopt the Alternative 1 approach to buffers as shown in Table 3 and the following buffer widths: Category IV = 40 feet; Category III = 150 feet; Category II = 225 feet; and Category I = 225 feet. Features of this option include:

- Buffer scheme is the most simple and straightforward to implement because it does not incorporate wildlife score or land use intensity.
- No additional analyses of wetland conditions, current land uses, or future build would need to be conducted if City chooses this option.
- Buffer widths would be standard minimum buffers, but may be increased, reduced, or averaged using the existing provisions in the code.
- Category IV width is based on Ecology's suggested sample ordinance for small cities in Western Washington (Bunten et al. 2012), which is considered best available science. This is less than SMP (50 feet).
- Category III width is based on Ecology Alternative 1 (Table 3). This is the same as a SMP with "high wildlife function".
- Category I and II widths are based on Ecology's suggested sample wetland ordinance for small cities in Western Washington (Bunten et al. 2012), which is considered best available science. These are the same as a SMP with "high wildlife function".

Develop new buffer scheme and widths

A third option is to develop a scheme and set of buffer widths based on actual conditions of wetlands and their buffers that occur outside of shoreline jurisdiction. Considerations for this option include:

- Analyses of wetland conditions, land cover, and future land uses would be required to demonstrate and document why the City's proposed buffer scheme and widths are consistent with best available science *or* why the proposed buffers deviate from best available science.
- Land cover analyses will require additional resources and time to complete.

The City of Tukwila provides an example of this option. In 2010, they used existing data and mapping of wetlands and streams to document that virtually none of the existing buffer areas in the Tukwila currently comply with buffer widths called for by best available science (Tukwila may not actually have any Category I wetlands). Further, due to the built-out nature of Tukwila, there is very limited opportunity for widening buffers to meet recommended buffer widths by Ecology and other relevant guidance. To document this land cover analysis and support the deviation from best available science with regard to buffers, the City produced a memo *Addendum to SAO Departures Memo for Wetland and Watercourse Buffer Widths* (dated June 17, 2010), which became part of the record for their ordinance update. Tukwila's current wetland buffers are: Category IV = 50 feet; Category III = 80 feet; Category II = 100 feet; and Category I = 100 feet.

Another example of this option is the approach taken by Island County to revise their CAO in the mid 2000s. Due to the uniqueness of County's landscape setting, climate, soils, and land uses, the County did not want to adopt the Ecology guidance outright because of the broad application to all wetlands in Western Washington. The County underwent a comprehensive inventory and analysis of 104 wetlands and developed a science-based, site-specific rating system tailored to wetlands present in the County. They reviewed relevant available science to develop a unique buffer scheme and widths. This process took several years to complete and was peer-reviewed. At the end, the scientific review recommended buffers similar to, and in some cases higher than, the Ecology recommended buffers described above (Table 3).

Thus, there is a range of potential outcomes with this option. We would be happy to discuss this and other factors to consider if the City is interested in this option.

Summary

A review of the current applicable scientific and technical information found that the current wetland buffer system is does not reflect best available science for protecting wetland functions. The options for revising the wetland buffer system range from predictable to site-specific as described in this memo.

Adopting the SMP buffer scheme and widths would be the most convenient and failsafe option. However, the buffer widths are based upon conditions of wetlands inside of shoreline jurisdiction and not other parts of the City. Wetlands at the shoreline or associated with streams that are considered shorelines of the state (Cedar River, May Creek, Black River/Springbrook Creek) provide different functions than other wetlands in the City due to their landscape position and typical adjacent land uses.

To decide the approach and set of buffer widths to carry through the CAO update process, the City should consider the current condition of wetlands in their jurisdiction, degree of past and ongoing impacts, and anticipated implementation issues or challenges. Ecology's buffer recommendations are based on a moderate-risk approach to protecting wetland functions. This means that there is a moderate risk that wetland functions will be impacted. Adopting smaller buffers represents a high-risk approach and generally requires justification why such an approach is necessary and offering alternative means of protecting wetland functions to help reduce the risk (e.g., requiring buffers to be well-vegetated, building setbacks, provisions to allow administrator to increase standard buffer widths, and tightly controlled buffer averaging and reduction provisions).

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Proposed Substantive Amendments to Critical Areas Ordinance

	Current Code Issue	Proposed Amendment	Justification
All Critical Areas	Allows new regional stormwater facilities in critical areas	Allow modification of existing regional stormwater facilities only	Inconsistent with BAS
	Does not allow construction of new trails in critical areas, existing only	Allow construction of new trails to be exempted	Inconsistent with January 29, 2013 Administrative Interpretation
	No specified exemption for public agency/utility	Allow exemption for public agencies/utilities with specified criteria: no other practical alternative, application of title unreasonably restrictive for utility provision, not unreasonable to health, safety, welfare, attempts to mitigate impacts, and is consistent with other regulations	Exemption for public agency/utility allowed
	No building setback from edges of critical area buffers	Require 15 foot building setback from critical area buffers	Missing protection supported by BAS
Critical Aquifer Recharge Areas (CARA's)	No substantive amendments proposed		
Frequently Flooded Areas	No substantive amendments proposed		
Geologically Hazardous Areas	No substantive amendments proposed		
Fish and Wildlife Habitat Conservation Areas (FWHCA's)	No means for Reviewing Official to require buffer for critical habitats	New section stating Reviewing Official can require buffers to protect fish and wildlife habitats. Width of buffer based on: type and intensity of use, habitat assessment, and Dept. of Fish and Wildlife recommendations.	BAS requires

Streams and Lakes	Classification system inconsistent with County and State	Update stream classification with State's permanent and interim typing systems. Also, criteria for Type F (currently Class 2) will be amended to specify fish presence, not salmon presence	Inconsistent with BAS
	City does not regulate but classifies artificially constructed channels and small non-wetland ponds as a Class 5 stream	Delete Class 5 stream class	Inconsistent with State typing system
	Buffers too small and inconsistent with neighboring jurisdictions. Recommendations are minimum needed to meet BAS	Increase stream buffers: Type F from 100' to 115', Type Np 75' no change, Type Ns 35' to 50'	Inconsistent with BAS
	No protection for habitat corridors between high functioning critical areas	Require increased buffer width when a stream or lake buffer is adjacent to a high functioning critical area	Recommended by BAS
	Buffer width allowed to be reduced below allowable minimum	Increase the minimum buffer width permissible by Administrative approval: Type F from 75' to 90', Type Np 50' to 60', Type Ns 25' to 40'	Inconsistent with BAS
	City allows reduction when sites are separated by certain pre-existing structures	Delete bulkheads as an intervening structure for reduction	Inconsistent with BAS and City's SMP
	One of the criteria for approval of a reduced buffer is that the site is extensively vegetated with native species.	Delete buffers that are extensively vegetated as one of the criteria for approval of reduced buffer width	Inconsistent with BAS
	LID stormwater practices are not used when a buffer is allowed to be reduced	Include LID stormwater practices as one of the criteria for approval of a reduced buffer width	Inconsistent with BAS
Wetlands	Exemptions allow stormwater management facilities in category 1, 2, and 3 wetlands	Only allow by exemption dispersion trenches, outfalls, and bioswales in the outer 25% of category 3 and 4 wetlands when no other location is feasible	Inconsistent with BAS

<table>
<tr><td></td><td>Exemptions allow disturbance of small category 3 wetlands</td><td>Remove exemption allowing for disturbance of small category 3 wetlands</td><td>BAS does not support</td></tr>
<tr><td></td><td>Wetland categories not consistent with current State standard</td><td>Revise wetland classifications to points scored on the wetlands rating system, as follows: category 1 = 70 -100 points, category 2 = 51-69 points, category 3 = 30-50 points, category 4 = less than 30 points</td><td>Inconsistent with State</td></tr>
<tr><td></td><td>Buffer widths do not meet minimum standards and do not match City’s SMP</td><td>Revise wetland buffers from only three buffers with category 1=100’, category 2=50’, and category 3=25’ to include range based on low, medium, or high function and minimal standards, as follows:
<table>
<tr><td></td><td>Low</td><td>Moderate</td><td>High</td></tr>
<tr><td>Category I</td><td>125’</td><td>150’</td><td>225’</td></tr>
<tr><td>Category II</td><td>100’</td><td>150’</td><td>225’</td></tr>
<tr><td>Category III</td><td>75’</td><td>125’</td><td>150’</td></tr>
<tr><td>Category IV</td><td>50’</td><td>50’</td><td>50’</td></tr>
</table></td><td>Inconsistent with BAS and City’s SMP</td></tr>
<tr><td></td><td>Ratios for mitigation for impacts to wetlands are not consistent with BAS or City’s SMP</td><td>Revise mitigation ratios to reflect amended classification system with category 4 and with new standards. To include:
<table>
<tr><td></td><td>Creation/Re-establishment</td><td>Rehabilitation</td><td>Enhancement</td></tr>
<tr><td>Category I</td><td>6:1</td><td>8:1</td><td>Not allowed</td></tr>
<tr><td>Category II</td><td>3:1</td><td>4:1</td><td>6:1</td></tr>
<tr><td>Category III</td><td>2:1</td><td>3:1</td><td>4:1</td></tr>
<tr><td>Category IV</td><td>1.5:1</td><td>2:1</td><td>3:1</td></tr>
</table></td><td>Inconsistent with BAS and City’s SMP</td></tr>
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