Critical Areas Ordinance Gap Analysis

SAMMAMISH UNIFIED DEVELOPMENT CODE 21.03.020 – ENVIRONMENTALLY CRITICAL AREAS

CITY OF SAMMAMISH

October 2023

Prepared for:

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DCG WATERSHED

Title-page image: Photograph from City of Sammamish Community Development Department. Looking toward Lake Sammamish from the plateau above.

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CITY OF SAMMAMISH SMC 21.03.020 UPDATE

1 INTRODUCTION

With passage of the Growth Management Act (GMA), local jurisdictions throughout Washington State, including the City of Sammamish (City), were required to develop policies and regulations to designate and protect critical areas. Critical areas, as defined by the GMA (Revised Code of Washington [RCW] 36.70A.030(5)), include wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas.

An ongoing requirement of the GMA is for local jurisdictions to periodically review and evaluate their adopted critical areas policies and regulations. In accordance with the GMA, the City last completed a comprehensive update of its critical areas policies and regulations in July 2013. The City is now required to update its critical areas policies and regulations by December 31, 2024. This includes the requirement to include the best available science (BAS). Any deviations from science-based recommendations should be identified, assessed and explained (Washington Administrative Code [WAC] 365-195-915). In addition, jurisdictions are to give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries. A BAS document for this code update has been prepared separately (DCG/Watershed 2023).

The City's critical areas policies are currently contained in the Environment and Conservation chapter of the Sammamish Comprehensive Plan (Comprehensive Plan). The City's critical areas regulations are currently codified in the Sammamish Municipal Code (SMC), Title 21 of the Sammamish Municipal Code.

This gap analysis provides a review of the current critical areas regulations, noting gaps where existing regulations may not be consistent with BAS or the GMA. It also makes recommendations for improvements to general aspects of the CAO such as clarity, consistency, ease of use, etc. The primary intention of this gap analysis is to help guide the update of the City's critical areas regulations.

1.1 Document Organization

Recommendations for updating the City's existing critical area regulations are provided in Sections 2 through 7. Section 2 addresses the general provisions that are applicable to all critical areas; Sections 3 through 7 address the different types of critical areas covered by the GMA, according to how they are organized in the current code. To highlight findings of the gap analysis, a Code review summary table is provided at the beginning of each section. Where a potential gap is identified, subsections provide further discussion.

2 GENERAL PROVISIONS (SMC 21.03.020A – V)

This section addresses code sections that are applicable to all types of critical areas. Table 1 provides a synopsis of recommended changes. See discussion of comments/recommendations in the subparts below this table.

Table 1. General provisions review summary.

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendation
21.03.020A	Purpose	None	
21.03.020B	Applicability	1. Add clarification on regulation of shoreline jurisdiction	1. Clarity
21.03.020C	Appeals	None	
21.03.020D	Critical area rules	1. Establish if there is value in retaining this subsection.	1. Clarity
21.03.020E	Fees	1. Establish if there is value in retaining this subsection,	1. Clarity
21.03.020F	Complete exemptions	1. Provide clarification on public utilities. 2. Recommend restructuring	1. Clarity 2. Clarity
21.03.020G	Allowances for existing urban development and other uses	1. Recommend restructuring from most restrictive to least restrictive	1. Clarity
21.03.020H	Exceptions	1. Require a Neighborhood Land Analysis for Reasonable Use Exception applications. 2. Include a threshold for maximum developable area inclusive of all structures and impervious surfaces,	1. Clarity, BAS 2. Clarity, BAS
21.03.020I	Critical areas maps and inventories	1. Review reference to critical areas map folio	1. Clarity
21.03.020J	Disclosure by applicant	1. Review regulation on shelf-life of reports and determine if field verification by the City is required.	1. Clarity, BAS
21.03.020K	Critical area review and study requirements	1. Incorporate timing thresholds for how long critical areas reports are valid.	1. BAS

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendation
21.03.020L	Recording residential site plans and notices on title	None	
21.03.020M	Avoiding impacts to critical areas	None	
21.03.020N	Mitigation, maintenance, monitoring and contingency	1. Consider revising order of preference for off-site mitigation options	1. BAS
21.03.020O	Mitigation plan requirements	None	
21.03.020P	Financial guarantees	1. Consider providing a bond quantity worksheet to support adequate bond values.	1. Clarity, BAS
21.03.020Q	Vegetation management plan	1. Establish submittal requirements for vegetation management plans.	1. Clarity
21.03.020R	Critical area markers, signs and fencing	None	
21.03.020S	Notice on title	1. Eliminate redundant requirements for proof that the notice has been recorded.	1. Clarity
21.03.020T	Critical area tracts and designations on site plans	1. Consider requiring erosion hazard areas to be designated in critical area tracts.	1. Clarity
21.03.020U	Alteration	1. Remove from chapter	1. Clarity
21.03.020V	Building setbacks	None	

***** See discussion of comments/recommendations in the subparts below this table.

2.1 Applicability (21.03.020B)

2.1.1 Add clarification on regulation of shoreline jurisdiction

Areas of the city within shoreline jurisdiction are subject to the Shoreline Master Program (SMP). For critical areas in shoreline jurisdiction, the SMP incorporates by reference Chapter 21.03, with the exclusion of certain sections. The applicability section could be improved by making the SMP-CAO connection clear.

2.2 Critical Area Rules (21.03.020D)

This section provides a statement of authority to administer Chapter 21.03 Environment and Sustainability. This section could be removed if it is not necessary to support routine administration of the chapter.

2.3 Fees (21.03.020E)

This section references the City's adopted fee schedule for critical areas review tasks, including administrative processing, inspection, and city- and third-party peer review tasks. This section could be removed if it is not necessary to support routine administration of the chapter.

2.4 Complete Exemptions (21.03.020F)

2.4.1 Clarify public utilities

SMC 21.03.020F(2) should be revised to clarify what utilities can be considered exempt. This subsection describes that public water, electric, and natural gas distribution, public sewer collection, cable communications, telephone utility, and related activities are considered exempt, but additional clarity is needed to better define what is considered a public agency.

2.4.2 Recommend restructuring

It is recommended to restructure this section for clarity of application. The City could consider reviewing SMC 21.03.020 F-H cohesively as they are related subsections to determine if certain exceptions or allowed uses can be combined or refined. These subsections could be revised to be more concise and clearer in their intent and application.

2.5 Allowances for existing urban development and other uses (21.03.020G)

This section lists eight types of activity eligible for allowance, subject to conditions consistent with the provisions of this chapter. The allowances are listed in no particular order. The City could reorganize by ordering the allowed activities from most restrictive to least restrictive.

2.6 Exceptions (21.03.020H)

2.6.1 Require a Neighborhood Land Analysis

SMC 21.03.020H(2)(b) could be improved by requiring a neighborhood land analysis with defined report requirements to be submitted with all reasonable use exception applications. This analysis would evaluate the surrounding conditions within the immediate vicinity to verify that the request is consistent with the reasonable use exception criteria included in SMC 21.03.020(H)(2)(a).

2.6.2 Include a threshold for maximum developable area

The City could consider incorporating a maximum developable area threshold in SMC 21.03.020H(2)(a) that establishes a square footage that is inclusive of all structures and impervious surface areas that cannot be exceeded for reasonable use exceptions.

2.7 Critical areas maps and inventories (21.03.020I)

2.7.1 Review reference to critical areas map folio

This section refers to the "City's critical areas map folio, as amended", as well as other mapping sources. Looking at the critical areas maps available through the City's website no reference to a critical areas map folio was found. The City should review this language and consider revising if necessary. If a specific map folio no longer exists, it may be clearer to reference the City's GIS database or online mapping tools. The City could also consider clarifying that these maps are intended to be advisory only, should be field-verified, and that conflicts between the maps and site specific features can be challenged by the property owner pursuant to SMC Chapter 21.01.

2.8 Disclosure by Applicant (21.03.020J)

This section describes critical areas disclosure requirements. It could be updated to note shelf-life of critical areas documentation and field verification and peer review requirements. As noted under SMC 21.03.020F.8, critical area permit approval lapses after a five-year period. Since critical area conditions can be dynamic, schedule for report updates and the review process should be mentioned or cross-referenced in section J.

2.9 Critical area review and study requirements (21.03.020K)

The City could consider incorporating thresholds for how long critical area reports are valid to determine when a new report is required or needs to be revisited. Currently, SMC 21.03.020K(2)(f) describes wetland delineation completed over five years ago needs to be revisited. Revisiting a wetland delineation that is five or more years old does not necessarily mean that a new wetland delineation needs to be completed. It means that a field verification by the City may need to be performed to determine whether the delineation is

still accurate or whether it needs to be redone based on existing conditions. However, this section lacks requirements for other types of critical areas reports and the City should determine if this approach is appropriate and what type of documentation is needed in these instances.

2.10 Mitigation, maintenance, monitoring and contingency (21.03.020N)

2.10.1 Consider revising order of preference for off-site mitigation options

The location criteria stated in 21.03.020N 3-4 prioritizes on-site mitigation, followed by off-site within the same drainage sub-basin as the regulated activity and within the City limits. While in-lieu fee and mitigation bank programs are allowed, they are the last listed options in order of preference. The most recent Ecology publication no longer supports that on-site, in kind mitigation is always the best option depending on the site-specific conditions. The City could consider revising this section to more easily allow for innovative off-site mitigation techniques such as mitigation banks and in-lieu fee programs. A preference for mitigation within the City limits could still be stated and terms and conditions of off-site mitigation could be incorporated into the appropriate sections of code.

2.11 Financial guarantees (21.03.020P)

2.11.1 Consider providing a bond quantity worksheet to support adequate bond values

The City may choose to provide a bond quantity worksheet to support adequate bond estimates. Periodic updates are recommended to keep bond costs current. When the bond requirement is out-of-date, it can fail to provide the intended incentive for the applicant to comply with the terms and conditions of critical area permits and associated mitigation goals and objectives. The bond quantity worksheet is referenced in the code, but it is a stand-alone document. The bond quality worksheet should be reviewed to determine if updates are necessary.

2.12 Vegetation Management Plan (21.03.020Q)

The City should consider establishing submittal requirements for Vegetation Management Plans (VMP) in SMC 21.03.020Q for clarity. The current provision states that submittal requirements will be set forth by the department, but lacks specific requirements. VMP must be prepared by a qualified professional. Specific requirements for a VMP commonly include:

- A description of existing site conditions, including critical areas and their functions
- Plan goals and objectives
- A clear description and map of the applicable VMP area
- Short- and long-term management prescriptions
- Allowed work windows

2.13 Notice on Title (21.03.020S)

Where redundant County recording is required, the City could consider removing the requirement in SMC 21.03.020S(2), which requires that the applicant shall submit proof that the notice has been filed for public record before the City shall approve any development proposal for the property or, in the case of subdivisions, short subdivisions and binding site plans, at or before recording. However, since the subdivision, short subdivision or binding site plan should already be recorded this step appears to be unnecessary.

2.14 Critical area tracts and designations on site plans (21.03.020T)

The City could consider requiring erosion hazard areas to be included as designated critical area tracts to delineate and protect these areas from future development proposals for subdivisions, short subdivisions, or binding site plans.

2.15 Alteration (21.03.020U)

2.15.1 Remove from chapter

The alteration section states that it has been recodified to SMC 21.04.040B.12, which is the definitions section. Therefore, it appears the content of this section was limited to a definition for "alteration". This section could be removed from SMC 21.03.02 to simplify the critical areas chapter.

3 Erosion, Flood, Landslide, and Seismic Hazard Areas (SMC 21.03.020W)

Geologically hazardous areas addressed in the Code include erosion, landslide, and seismic hazard areas. Flood hazard areas are also included in the same code section, though these are typically defined as a separate critical area type (frequently flooded areas), consistent with the WAC definition of critical areas (WAC 365-196-485.2).

The goal of geologic hazard regulations, as with frequently flooded area regulations, is to protect people and property from potential damage associated with these areas.

Table 2. Erosion, Flood, Landslide and Seismic Hazard Areas review summary.

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendation
21.03.020.W.3-5	Frequently Flooded Areas, Flood Hazard Areas, Channel Relocation and Meander Areas	1. Relocate to standalone subsection outside of geologic hazards.	1. Consistency with the WAC definition of critical areas.
21.03.020W	Erosion, Flood, Landslide and Seismic Hazard Areas	1. Add designation criteria for erosion, landslide, and seismic hazard areas.	1. Clarity
21.04.040(114-115)	Erosion Hazard Areas	1. Reorganize definition. 2. Improve Erosion Hazard Area definition and remove designations no longer used by USDA	1. Clarity 2. Clarity/BAS
21.04.040(195)	Landslide Hazard Areas	1. Include additional specificity on landslide hazard designation. 2. Update references for consistency with WAC.	1. BAS 2. BAS
21.04.040(305)	Seismic Hazard Areas	1. Include additional specificity on seismic hazard designation. 2. Consider expanding definition to include seismic hazards other than liquefaction.	1. BAS 2. BAS

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendation
21.03.020W.6	Landslide Hazard Buffer requirements	1. Allow for elimination of landslide hazard buffers provided suitable assessment is performed.	1. BAS/Clarity
21.03.020W.7	Seismic Hazard Development requirements	1. Include surface rupture seismic induces landslides, and lateral spreading.	1. BAS

***** See discussion of comments/recommendations in the subparts below this table.

3.1 Frequently Flooded Areas (SMC 21.03.020W.3-5)

3.1.1 Remove from Chapter

Frequently flooded areas are considered their own type of critical area separate from geologically hazardous areas in WAC 365-196-485(2). For consistency with the WAC definition of critical areas, it is recommended to remove the subsection for frequently flooded areas and related subtopics to their own section. Flood hazard areas should be included as a frequently flooded area, instead of their own type of critical area.

3.2 Erosion, Landslide and Seismic Hazards (SMC 21.03.020W)

3.2.1 Designation Criteria

For clarity of application, it is recommended to include designation criteria for erosion, landslide, and seismic hazard areas. The applicable definitions in SMC 21.04.040 should be consistent with the designation criteria.

3.3 Technical Terms and Land Use Definitions (SMC 21.04.040)

3.3.1 Definition for Erosion Hazard Area and the erosion hazard near sensitive water body overlay (SMC 21.04.040(114-115))

It is recommended to revise the definition for erosion hazard area in SMC 21.04.040(114) to remove ambiguity and outdated references that are no longer used by the United States Department of Agriculture (USDA). For clarity and consistency with the most recent designations, the City could consider revising SMC 21.04.040(114) as follows:

Erosion hazard areas. Those areas in the City underlain by soils that are subject to severe erosion when disturbed. Such soils include, those on slopes of 15% or more and mapped by the USDA as one of the following soil types:

a. The Alderwood gravelly sandy loam (AgD);
b. The Alderwood and Kitsap soils (AkF);
c. The Beausite gravelly sandy loam (BeD and BeF);
d. The Everett gravelly sandy loam (EvD);
e. The Kitsap silt loam (KpD);

f. The Ovall gravelly loam (OvD and OvF);
g. The Ragnar fine sandy loam (RaD); and
h. The Ragnar-Indianola Association (RdE).

Erosion hazards may also include soils not mapped by the United States Department of Agriculture (USDA) as one of the above soil types, where sloped conditions on the property exceed 15% for an area with either 10 feet of vertical relief or that extends laterally at least 30 feet, and could lead to sediment transfers into wetland areas, waters of the state, or onto neighboring properties and right of ways.

It is also recommended to reorganize the definition of the erosion hazard near sensitive water body overlay for clarity in SMC 21.04.040(115). It is suggested to revise the definition to relocate the designation criteria for the no-disturbance area and properties that drain to no-disturbance areas to SMC 21.03.020W.

3.3.2 Definition for Landslide Hazard Area (SMC 21.04.040(195))

3.3.2.1 Additional designation criteria

To provide additional specificity, the City could consider adding areas that include unconsolidated glacial deposits subject to elevated groundwater levels after prolonged rainfall or rain-on-snow events as designation criteria for a landslide hazard area.

3.3.3 Definition for Seismic Hazard Area (SMC 21.04.040(305))

Tsunami and seiche hazard areas would also include areas inundated by projected wave heights resulting from an offshore (Cascadia Subduction Zone) earthquake. The City could consider adding designation criteria to identify such areas as seismic hazard indicators. In particular, the City could consider expanding the definition to include seismic hazards other than liquefaction. The current definition lacks references to surface rupture, seismic induced landslides, and lateral spreading. To address these gaps, it is recommended to revise SMC 21.04.040(305) as follows:

Seismic hazard areas. Those areas determined to have susceptibility to liquefaction, surface rupture, seismically induced landslides, or lateral spreading as determined by a geotechnical investigation, or mapped as moderate to high and high liquefaction susceptibility and peat deposits on the Liquefaction Susceptibility Map of King County, Washington, Washington Division of Geology and Earth Sciences, OFR 2004-20, Palmer et al., September, 2004, as revised.

3.3.4 Seismic Hazard Areas – Development Standards and Permitted Alterations SMC 21.03.040(W)(7)

There are additional hazards related to seismic conditions other than liquefaction that should be considered during the review of development proposals. For consistency with the above referenced proposed definition, it is recommended to revise the development standards contained within SMC 21.04.040W(7) to include references to surface rupture, seismic induced landslides, and lateral spreading. The City could considering incorporating the following standards:

Seismic hazard areas – Development standard and Permitted alterations
A development proposal containing a seismic hazard area shall meet the following requirements:

a. Alteration to seismic hazard areas may be allowed only as follows:
i. The evaluation of site-specific subsurface conditions shows that the proposed development site is not located in a seismic hazard area: or
ii. Mitigation based on the best available engineering and geological practices is implemented that either eliminates or minimizes the risk of damage, death, or injury resulting from surface rupture, seismically induced settlement, landsliding, lateral spreading, or soil liquefaction.

3.3.5 Landslide Hazard Areas – Development Standards and Permitted Alterations SMC 21.03.040W(6)

To allow for flexibility in certain instances, it is recommended that the City consider allowing for elimination of the required development buffer from a landslide hazard area when a suitable assessment is performed. It is possible to safely develop on steep slopes when adequate investigation is conducted, and appropriate precautions are taken. The City could consider revising SMC 21.03.040W(6)(a)(i) to the following:

A development proposal containing, or within 50 feet of, a landslide hazard area shall meet the following requirements:

a. A minimum buffer of 50 feet shall be established from the top and toe of the landslide hazard area. The buffer shall be extended as required to mitigate a landslide or erosion hazard or as otherwise necessary to protect the public health, safety, and welfare.

i. The buffer may be reduced or removed if, based on a critical areas study prepared by a professional geotechnical engineer, the City determines that the reduction will adequately protect the proposed development and other properties, the critical area and other critical areas off site.

To support this flexibility, the City could also consider replacing SMC 21.04.040W(6)(b)(vii) and including the proposed language for (ix) as follows:

viii. An evaluation of the slope by a qualified geotechnical professional of the general stability of the slope.
xi If the reduction of buffers to less than 15 feet or removal of buffers is proposed the following additional requirements of the critical area study must be performed:
a. Exploration(s) that provide strength data such as soil Standard Penetration Tests (SPT) or other industry accepted methods. For construction above a landslide hazard at least one exploration must be conducted near the top of the slope or above the proposed construction area and extend at least to the elevation of the base of the landslide hazard. For sites where structures are planned at the base of a landslide hazard area at least one exploration is required to be

conducted near the top of the slope or the property boundary if the hazard extends off of the property. Another exploration should be performed near the base of the landslide hazard or if the landslide hazard extends off the property the exploration should be placed near the property boundary where the hazard exists.

b. *A comprehensive study of slope stability including an analysis of proposed cuts, fills, and other site grading and construction effects where the overall minimum factor of safety for slope stability is 1.5 for static conditions and 1.1 for seismic conditions as based on current building code seismic design conditions for the post construction conditions. Additionally, a slope stability analysis of the worst case conditions during construction must also be evaluated for static conditions and show a factor of safety of 1.5 or greater. These analyses must be included in a report including soil parameters and loading conditions utilized for the analysis.*

Lastly, to ensure adequate protections are considered, the City could consider including a third party peer review requirement under SMC 21.03.040W(6)(e)(i), as subsection (g) as follows:

g. *A comprehensive study outlined in SMC 21.03.020(W)(6)(b)(ix) is performed, peer reviewed by a professional geotechnical engineer of the City's choosing and approved by the City.*

4 CRITICAL AQUIFER RECHARGE AREAS (SMC 21.03.020X)

The City's existing Critical Aquifer Recharge Areas (CARA) regulations are generally in line with BAS, however some modifications could be made to strengthen the regulations and facilitate ease of use and implementation.

Table 3. Critical aquifer recharge areas review summary.

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendations
21.03.020X	Critical Aquifer Recharge Areas – Development Standards	1. Add Critical Aquifer Recharge Area definition to definitions chapter and add location of mapped CARAs	1. Clarity

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendations
21.03.020X.1	Groundwater Quantity Protection Standards	1. Update reference to most recent version of the Stormwater Management Manual for Western Washington (SWMMWW).	1. BAS
21.03.020X.2	Groundwater Quality Protection Standards	1. Section a. clarify the term "significant threshold" 2. Section b. add language for use of BAS	1. Clarity 2. BAS
21.03.020X.3	Regulation of Facilities Handling and Storing Hazardous Materials Regulated by the State Department of Ecology	1. Section a. reference RCW 90.48 (Water Pollution Control)	1. Consistency with RCW
21.03.020X.4	Prohibited Uses	None	
21.03.020X.5	Requirements for Specific Uses and Activities	None	

* See discussion of comments/recommendations in the subparts below this table.

4.1 Critical Aquifer Recharge Area – Development Standards (SMC 21.03.020X)

The Critical Aquifer Recharge Area section does not currently provide a definition of Critical Aquifer Recharge Area (CARA) nor any information on the location or mapping of CARA. The development code's definitions chapter is found in SMC 21.10.010 and contains a short list of definitions, but largely just adopts the definitions of WAC 197-11-700 through 197-11-799 which also does not include the definition of a CARA. WAC 365-190-030 includes the definition of a CARA, and we suggest including the WAC definition in the definitions chapter of the code.

To enhance the CARA's section, the City could consider listing the areas within the city that are designated as CARAs or reference the City's Online Map Application to aid in identification of these areas.

4.1.1 Expand Mapping Efforts

The City could consider identifying specific types of critical aquifer recharge areas maps that may be produced, including the following:

- Maps indicating the location of existing wells and their respective aquifers, particularly for Group B wells within designated CARAs, to be used in a well

monitoring program for tracking groundwater level trends and groundwater quality changes.

- Maps of abandoned wells within designated CARAs to assure the wells do not become pathways for contamination of local aquifers.

- Maps indicating the location of existing activities listed in Table 21.03.020X.4.b that identifies land uses and materials that should be discontinued, removed and decommissioned where existing in Class 1, 2 and 3 CARAs.

4.2 Groundwater Quantity Protection Standards (SDC 21.03.020X.1)

Section 2(c.) references the Western Washington Stormwater Manual (2005). This document was updated in July of 2019 under Ecology Publication No. 19-10-021. Language should be changed to reference the current or most up-to-date version of the Stormwater Management Manual for Western Washington (SWMMWW).

4.3 Groundwater Quality Protection Standards (SMC 21.03.020X.2)

4.3.1 Add clarifying language and/or criteria

Section 2(a.) states that "activities can only be permitted in a critical aquifer recharge area if the proposed activity will not result in a *significant increased risk* of contamination of drinking water supplies." The language "significant increased risk" is vague and should have definite parameters defining what is considered a significant increased risk. These parameters can be developed with the help of a professional hydrologist.

4.3.2 Add BAS language

Section 2(b.) allows the City to condition development permits based on known, available and reasonable methods of prevention, control, and treatment. This section would increase compliance with current standards if language was added, stating that it should also be based on BAS.

4.4 Regulation of Facilities Handling and Storing Hazardous Materials Regulated by the State Department of Ecology (SMC 21.03.020X.3)

4.4.1 Reference RCW standards

Section 3(b.) outlines when a hydrogeologic critical areas assessment report, spill containment and response plan, and/or groundwater monitoring plan is required. This section should refer to RCW 90.48 (Water Pollution Control) and state that these reports should address and comply with the standards of this Chapter of the RCW.

5 WETLANDS (SMC 21.03.020Y)

The wetlands sections of the Code should be updated to be consistent with BAS. Notable recommendations include updating mitigation ratios and buffer widths and

adding impact minimization measures. Specific recommendations are provided in Table 4 below.

Table 4. Wetlands review summary.

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendation
21.03.020Y	Wetlands	1. Add wetland definition to definitions chapter and add an identification and delineation subsection to wetlands chapter	1. Clarity, BAS
21.03.020Y.1	Wetlands- Development Standards	1. Remove point references and rely on source document 2. Modify required buffer widths/consider alternate buffer table(s) per Ecology guidance 3. Provide more detail on standard buffer condition requirements 4. Add or reference the habitat corridor requirement from SMC 21.03.020Z.2 and consider modifications for use with wetland buffer table 5. Update reference to outdated rating system and point totals 6. Review buffer reductions for consistency with BAS and buffer approach chosen	1. BAS/Clarity 2. BAS 3. BAS 4. BAS 5. BAS 6. BAS
21.03.020Y.2	Wetlands- Permitted alterations	None	
21.03.020Y.3	Wetlands- Mitigation requirements	1. Update and consider expanding on mitigation ratios 2. Consider adding allowance for credit-debit method as alternative to mitigation ratios 3. Add definitions for the different mitigation types 4. Consider applying increased protections to bog wetlands and associated buffers to prevent stormwater impacts	1. BAS 2. BAS 3. Clarity 4. Climate change
21.03.020Y.4	Wetlands- Alternative mitigation	None	
21.03.020Y.5	Wetlands- Development flexibilities	1. Consider updating isolated wetland allowances.	1. Clarity/BAS
21.03.020Y.6	Wetland management area- Special district overlay	1. Consider removing wetland management area – Special district overlays	1. Clarity/BAS

* See discussion of comments/recommendations in the subparts below this table.

5.1 Wetlands (SMC 21.03.020Y)

5.1.1 Add wetland definition to definitions chapter and add an identification and delineation subsection to wetlands chapter

The wetlands chapter does not currently provide a definition of wetland nor any information on designating wetland areas. The development code's definitions chapter is found in SMC 21.10.010 and contains a short list of definitions, but largely just adopts the definitions of WAC 197-11-700 through 197-11-799 which also does not include the definition of wetland. Wetland is defined instead in WAC 365-190-030. We suggest including the WAC definition in the definitions chapter of the code.

Additionally, the wetlands section could be clarified by having a section heading for "identification and delineation" which describes that delineation of wetland boundaries shall be done in accordance with the approved federal wetland delineation manual and applicable regional supplement. This section could also include information on how long wetland delineations are valid (typically five years).

5.2 Wetlands- Development Standards (SMC 21.03.020Y.1)

5.2.1 Remove point references and rely on source document

The Wetland Development Standards section requires that wetlands be rated using the Washington State Wetland Rating System for Western Washington. The language "Department of Ecology, 2014, or as may be amended or revised by the Department from time to time" is included in the reference indicating that the most recent version of the rating system will be required. The section goes on to summarize wetland categories that are defined by the rating system, including point totals. To ensure that this section remains up to date, even if the rating system point breakdowns are changed, and for consistency with the "or as amended" reference, the City could consider removing the point totals from the summaries and relying instead on the source document referenced. A general description of the differences between wetland categories could be left if desired.

5.2.2 Modify required buffer widths/consider alternate buffer table(s) per Ecology guidance

Effective wetland buffer widths vary depending on the targeted wetland functions, intensity of surrounding land use, and buffer characteristics. The buffer width requirements should state that standard buffer widths presume the buffer is vegetated with native plants appropriate for this ecoregion. Buffers that do not meet that criteria should be increased. See Section 3.5.4 below for further discussion.

The Code's existing buffer width system prescribes a standard buffer width based on wetland category and habitat score (Table 5). Ecology's latest wetland guidance for CAO updates, Publication 22-06-014 finalized in October 2022, provides three BAS based options for wetland buffer tables which each have some similarities and some differences to the buffer system in the current code. Ecology's preferred option, Option 1, provides the most flexibility and site-specific buffers. It is similar to the codes existing buffer system in that the buffers are based on wetland category and habitat score.

Option 1 includes options to reduce the buffer through provision of a habitat corridor and implementation of minimization measures to reduce the level of impact from the adjacent land use. Use of the lowest buffer widths under this option, shown in Table 6 below, requires the implementation of minimization measures shown in Table 7. Such measures are not currently in the code. Table 7 is not a complete list of measures, nor is every measure required, but every effort should be made to implement as many measures as applicable and practicable, as determined by City staff. If an applicant chooses not to apply the applicable minimization measures, then an approximately 33% increase in the width of all buffers is required. Note that to use the reduced widths in Table 6, the protection of a wildlife corridor is also required between higher functioning wetlands that score 6 or more habitat points and certain other protected areas. (A different habitat corridor requirement for certain high functioning wetlands is currently included in the FHWCA chapter of the code (21.03.020Z.2) which may be able to be modified to meet the requirement for buffer table Option 1). If a corridor cannot be provided, then the non-reduced (33% increase) buffer would be required for those higher functioning wetlands. If Option 1 is selected, the existing habitat corridor requirements should be reviewed and updated (and moved into the wetlands section- see 5.2.4 below) for consistency with the latest guidance. Table 5 below shows the code's current buffer widths, followed by Table 6 with the Ecology recommended Option 1 buffer widths. Note that some Category I buffer widths and Category IV buffer widths are larger under the City's current buffer widths table than Option 1. The City could choose to use Option 1 with an increase in those widths to match the current code.

Table 5. Current wetlands buffers from SMC 21.03.020Y.1.b

WETLAND STANDARD BUFFERS	
Wetland Category	Standard Buffer Width
Category 1:	
Natural heritage or bog wetlands	215'
Habitat score 8 – 9	200'
Habitat score 5 – 7	150'
Not meeting above criteria	125'
Category 2:	
Habitat score 8 – 9	150'
Habitat score 5 – 7	100'
Not meeting above criteria	75'
Category 3*:	
Habitat score 8 – 9	75'
Not meeting above criteria	50'
Category 4*:	
All land use types	50'

* *Subject to* SDC 21.03.020Y.5.

Table 6. Ecology Buffer Option 1 (wetland buffer width requirements if Table 7 is implemented and a habitat corridor is provided)

Category of Wetland	Habitat Score 3-5 points (corridor not required)	Habitat Score 6-7 points	Habitat Score 8-9 points	Buffer width based on special characteristics
Category I or II: Based on rating of functions (and not listed below)	75	110	225	NA
Category I: Bogs and Wetlands of High Conservation Value	NA	NA	225	190

Category of Wetland	Habitat Score 3-5 points (corridor not required)	Habitat Score 6-7 points	Habitat Score 8-9 points	Buffer width based on special characteristics
Category I: Interdunal	NA	NA	225	NA
Category I: Forested	75	110	225	NA
Category I: Estuarine and wetlands in coastal lagoons	NA	NA	NA	150
Category II: Interdunal	NA	NA	NA	110
Category II: Estuarine and wetlands in coastal lagoons	NA	NA	NA	110
Category III: All types except interdunal	60	110	225	NA
Category III: Interdunal	NA	NA	NA	60
Category IV: All types	40	40	40	NA

Table 7. Impact minimization measures

Examples of disturbance	Activities and uses that cause disturbances	Examples of measures to minimize impacts
Lights	• Parking lots • Commercial/industrial • Residential • Recreation (e.g., athletic fields) • Agricultural buildings	• Direct lights away from wetland • Only use lighting where necessary for public safety and keep lights of when not needed • Use motion-activated lights • Use full cut-off filters to cover light bulbs and direct light only where needed • Limit use of blue-white colored lights in favor of red-amber hues • Use lower-intensity LED lighting • Dim light to the lowest acceptable intensity
Noise	• Commercial • Industrial • Recreation (e.g., athletic fields, bleachers, etc.) • residential • Agriculture	• Locate activity that generates noise away from wetland • Construct a fence to reduce noise impacts on adjacent wetland and buffer • Plant a strip of dense shrub vegetation adjacent to wetland buffer
Toxic runoff	• Parking lots • Roads • Commercial/industrial • Residential areas • Application of pesticides • Landscaping • Agriculture	• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 ft. of wetland • Apply integrated pest management (These examples are not necessarily adequate for minimizing toxic runoff if threatened or endangered species are present at the site.)
Stormwater runoff	• Parking lots • Roads • Residential areas • Commercial/industrial • Recreation • Landscaping/lawns • Other impermeable surfaces, compacted soil, etc.	• Retrofit stormwater detention and treatment for roads and existing adjacent development • Prevent channelized or sheet flow from lawns that directly enters the buffer • Infiltrate or treat, detain, and disperse new runoff from impervious surfaces and lawns

Examples of disturbance	Activities and uses that cause disturbances	Examples of measures to minimize impacts
Pets and human disturbance	• Residential areas • Recreation	• Use privacy fencing • Planet dense native vegetation to delineate buffer edge and to discourage disturbance • Place wetland and its buffer in a separate tract • Place signs around the wetland buffer every 50-200 ft., and for subdivisions place signs at the back of each residential lot • When platting new subdivisions, locate greenbelts, stormwater facilities, and other lower-intensity uses adjacent to wetland buffers
Dust	• Tilled fields • Roads	• Use best management practices to control dust

Ecology Buffer Option 2 is based on category and the level of impact from the adjacent proposed or existing land use. This option necessitates inclusion of a table with levels of impacts from proposed land use types.

Table 8. Ecology Buffer Option 2

Wetland Category	Land Use Impact		
	Low	Moderate	High
I	150 ft	225 ft	300 ft
II	150 ft	225 ft	300 ft
III	75 ft	110 ft	150 ft
IV	25 ft	40 ft	50 ft

Finally, Ecology Buffer Option 3 is based solely on the category of wetland. It is the simplest to administer, however it is the least flexible and differs the most from the system in the current code. We do not recommend Option 3 for Sammamish.

Table 9. Ecology Buffer Option 3

Wetland Category	Buffer
I	300 ft
II	300 ft
III	150 ft
IV	50 ft

Additional details and examples can be found in the following guidance documents:

- The 2022 Ecology document *Wetland Guidance for Critical Areas Ordinance (CAO) Updates, Western and Eastern Washington* (ECY 2022), which is intended as an update to the 2016/2018 document.
- Wetlands in Washington State – Volume 2, Appendix 8-C (Granger et al. 2005, Revised July 2018)

5.2.3 Provide more detail on standard buffer condition requirements

Some modification and additional detail to this section would improve clarity and better align with BAS recommendations. BAS buffer recommendations are based on the assumption that the buffer is well vegetated with native species appropriate to the ecoregion. This is not currently stated in the Code. If the buffer does not consist of vegetation adequate to provide the necessary protection, then either the buffer area should be planted, or the buffer width should be increased. Ecology suggests the following language be added in the description of required standard buffer widths to ensure a buffer condition that is adequate to protect the wetland resource:

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

Ecology's Option 1 (preferred) buffer approach for Western Washington, recommends a one-third increase in buffer widths if minimization measures and a habitat corridor are not provided. Ecology's model ordinance recommends a case-by-case approach to buffer increases under certain circumstances, including minimal vegetative cover (Ecology Publication 22-06-014). Some neighboring jurisdictions have applied set buffer width increases. For example, City of Kirkland applies a 33 percent increase to buffers that are not densely vegetated with native trees, shrubs and groundcover plants and are not planted to meet that standard (KZC 90.55). City of Issaquah requires development proposals to employ rehabilitation or enhancement of degraded buffer areas when more than 25 percent of the buffer is invasive/nonnative vegetation or native tree/shrub covers less than 25 percent of the buffer area (IMC 18.802.220.H).

5.2.4 Add or reference the habitat corridor requirement from SMC 21.03.020Z.2 and consider modifications for use with wetland buffer table

The fish and wildlife habitat conservation area regulations in SMC 21.03.020Z.2 include a requirement that, "on development proposal sites that contain Type F or Np streams and/or wetlands with a high habitat score greater than or equal to eight, that are also located within 200 feet of an on-site or off-site Type F or Np stream and/or wetland with a high habitat score greater than or equal to eight, a fish and wildlife habitat corridor shall be set aside and protected…". The regulation goes on to list certain criteria that must be met. This requirement is similar to the habitat corridor requirement that is necessary to use the reduced wetland buffer widths for certain high functioning

wetlands under the recommended wetland buffer approach, Ecology Option 1 (see 5.2.2). If Ecology Option 1 is selected the City should review the existing habitat corridor requirement and consider modifying, it for use with the wetland buffer section so there is only one habitat corridor requirement. Modifications would be required to ensure it meets the intent of Ecology Option 1, including that the requirement applies to wetlands with a habitat score greater than 6 rather than the current 8 habitat points threshold. Even if another wetland buffer table is selected the existing habitat corridor requirements in the FWHCA section should be reviewed and potentially modified for consistency with the wetlands chapter and should be referenced or added to the wetlands development standards section as it applies to parcels with wetlands not just FHWCAs.

5.2.5 Update reference to outdated rating system and point totals

SMC 21.03.020Y.1.h references the prior ratings system point values and needs to be updated. The current 2014 wetland rating system point values for habitat functions are in the Wetlands in Washington State – Volume 2, Appendix 8-C (Ecology Publication 05-06-008, Revised July 2018). This 2018 version of Appendix 8-C was modified to apply the current habitat score ranges to the wetland buffer tables.

5.2.6 Review buffer reductions for consistency with BAS and buffer approach chosen (SMC 21.03.020Y.1.i)

The buffer modifications currently in the code should be reviewed in conjunction with the updates to the buffer width requirements (see 5.2.2). Depending on the buffer approach chosen some modifications may not be applicable, may not be compliant with BAS, or may need to be re-structured to fit with the chosen buffer tables. For example, if Buffer Option 1 is chosen, the only allowed reductions will be built into the buffer table(s). BAS does not support further reductions. Furthermore, many of the incentive options for reducing the standard buffer currently in the code apply when the buffer is degraded in some way. As noted in 5.2.3, BAS buffer recommendations are based on the assumption that the buffer is well vegetated with native species appropriate to the ecoregion. If the buffer does not consist of vegetation adequate to provide the necessary protection, then either the buffer area should be planted or the buffer width should be increased. A reduction of the standard buffer in these circumstances would generally not be supported by BAS.

5.3 Wetlands- Mitigation Requirements (SMC 21.03.020Y.3)

5.3.1 Update and consider expanding on mitigation ratios

Mitigation ratios are intended to replace lost functions and values stemming from a proposed land use while also accounting for temporal losses. BAS wetland mitigation ratios are based on the current Ecology Rating System and type of mitigation used. The code currently has a mitigation ratios table for both permanent and temporary impacts, however the ratios should be reviewed and revised to better align with BAS.

The code's current mitigation ratios for permanent mitigation are shown in Table 10 below. Ecology's general recommended mitigation ratios are shown in Table 11 below, along with the recommended ratios for the types of special characteristic wetlands

included in the code's current table, and the reduced ratios for enhancement that are recommended when combined with 1:1 replacement through re-establishment or creation, also included in the code's current table.

Table 10. Mitigation Ratios for Permanent Wetland Mitigation in Current Code (SMC 21.03.020Y.3.f.i(a)).

PERMANENT WETLAND MITIGATION			
Category and type of wetland	Wetland reestablishment or creation	Wetland rehabilitation	1:1 Wetland reestablishment or wetland creation (R/C) and wetland enhancement (E)
Category 1			
Bog	Not allowed	6:1 rehabilitation of a bog	Case-by-case
Natural heritage site	Not allowed	6:1 rehabilitation of a natural heritage site	Case-by-case
Based on score for functions	4:1	8:1	1:1 R/C and 6:1 E
Forested	6:1	12:1	1:1 R/C and 10:1 E
Category 2	3:1	8:1	1:1 R/C and 4:1 E
Category 3	2:1	4:1	1:1 R/C and 2:1 E
Category 4	1.5:1	3:1	1:1 R/C and 2:1 E

Table 11. Wetland Mitigation Ratios recommended by Ecology[1].

Category of Impacted Wetland[2]	**Re-Establishment or Creation**	**Rehabilitation**	**Preservation**	**Enhancement**	**Wetland Re-establishment or Creation (R/C) and Enhancement (E)**
Category I					
Bog	NA	NA	24:1	24:1	Not considered possible[3]
Wetlands of High Conservation Value	Consult with WA DNR	Consult with WA DNR	24:1	Consult with WA DNR	Not considered possible
Based on score for functions	4:1	8:1	16:1	16:1	1:1 R/C and 12:1 E
Forested	6:1	12:1	24:1	24:1	1:1 R/C and 20:1 E
Category II	3:1	6:1	12:1	12:1	1:1 R/C and 8:1 E
Category III	2:1	4:1	8:1	8:1	1:1 R/C and 4:1 E
Category IV	1.5:1	3:1	6:1	6:1	1:1 R/C and 2:1 E

[1] Wetland Guidance for CAO Updates Appendix E, Mitigation Ratio Tables (ECY 2022) and Table 6B-2 in Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance –Version 2 (ECY et al., 2021).

[2] Wetland Categories based on the Western Washington Wetland Rating System (Hruby 2014).

[3] Natural Heritage sites and bogs are considered irreplaceable wetlands because they perform some functions that cannot be replaced through compensatory mitigation. Impacts to such wetlands would therefore result in a net loss of some functions no matter what kind of compensation is proposed.

As can be seen by comparing Tables 10 and 11, the ratios for re-establishment or creation in the current code are consistent with BAS. Wetland rehabilitation ratios are also generally in line with BAS with the exception of bogs and Wetlands of High Conservation Value. (Note that "Natural Heritage Wetlands" are now referred to as "Wetlands of High Conservation Value".) The Category II rehabilitation ratio in the current code is higher than the BAS recommended ratio. The current code does not include enhancement only or preservation as a mitigation option. The City could consider adding one or both of these categories. The current code does include enhancement as an option when combined with 1:1 replacement through re-establishment or creation. However, the ratios currently required for this type of mitigation are below those supported by BAS. The City should update these ratios to better comply with BAS.

5.3.2 Consider adding allowance for credit-debit method as alternative to mitigation ratios

To give regulators and applicants a functions-based alternative to set mitigation ratios, Ecology developed a tool called the credit-debit method. This method, like the Ecology wetland rating form, is a peer-reviewed rapid assessment tool. The credit-debit approach may be used to calculate functional gain of the proposed mitigation and functional loss due to proposed wetland impacts. This generates acre-points that can be compared in a balance sheet. Depending on specific site conditions, this may result in less or more mitigation than would be required under the standard mitigation ratio guidance. The City may want to consider adding language that would allow, as an alternative to the mitigation ratios, mitigation based on the credit/debit tool described in Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington: Final Report (Ecology Publication #10-06-011, Olympia, WA, March 2012, or as revised).

The City Comprehensive Plan should also be reviewed to see if policy changes or additions would be necessary to support a credit-debit approach to mitigation.

5.3.3 Add definitions for the different mitigation types

No definitions are provided for the different types of mitigation the code allows-establishment/creation, rehabilitation, enhancement etc. These terms should be defined in the mitigation requirements code section as they each have specific criteria that must be met. Alternatively, they could be defined in a separate definitions chapter and referenced in the wetlands section, or the code could reference the definitions in one of the wetland guidance documents where these terms are defined.

5.3.4 Consider applying increased protections to bog wetlands and associated buffers to prevent stormwater impacts

Bogs are important carbon sinks that are highly sensitive to disturbance, particularly stormwater discharges and changes in pH. As a strategy to manage climate change impacts to wetlands, it is recommended to apply increased protections to bog wetlands and associated buffers to prevent stormwater impacts that could change pH and alter sensitive plant communities.

5.4 Wetlands – Development flexibilities (SMC 21.03.020Y.5)

Consider updating allowances for isolated wetlands. Applicants should still avoid and minimize direct wetland impacts to comply with BAS. Additionally, the City's definition of isolated wetlands (SMC 21.04.040B.398) is incorrectly referenced in the code and the definition lacks specificity. Hydrologic connections can consider both surface and ground water. If the City is only considering surface water connections for wetlands, that should be clearly stated.

5.5 Wetland management area – Special district overlay (SMC 21.03.020Y.6)

The Wetland Management Area (WMA) special district overlay approach to wetland management appears to be an artifact of an old regulatory framework that predates current wetland classifications and guidance from the Washington State Department of Ecology (Ecology). WMA reference to the 1994 East Lake Sammamish Basin and Nonpoint Action Plan predates incorporation of the City and current wetland management BAS guidance. The current 2014 *Wetland Rating System for Western Washington* considers factors central to the WMA approach, including headwater wetlands, bog wetlands, and water quality. A more streamlined regulatory framework based on current Ecology guidance may be more efficient.

6 Fish and Wildlife Habitat Conservation Areas (SMC 21.03.020Z)

The City's fish and wildlife habitat conservation areas (FWHCAs) regulations should be updated to better align with current BAS. Several considerations for updates are discussed below.

Table 12. Fish and wildlife habitat conservation areas review summary.

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendation
21.03.020Z	Fish and Wildlife Habitat Conservation Areas	1. Add or reference a definition and provide list of designated areas and species of local importance.	1. Clarity
21.03.020Z.1	Fish and wildlife habitat conservation areas-Development standards	None	
21.03.020Z.2	Fish and wildlife habitat corridors	Provide public mapping of habitat corridors in the city.	1. Clarity

***** See discussion of comments/recommendations in the subparts below this table.

6.1 Fish and wildlife habitat conservation areas (21.03.020Z)

6.1.1 Add or reference a definition and provide list of designated areas

The Fish and Wildlife Habitat Conservation Areas section starts off with a development standards section for proposals that include FHWCAs or their buffers, however no definition of FWHCA is provided. The development code's definitions chapter is found in SMC 21.10.010 and contains a short list of definitions, but largely just adopts the definitions of WAC 197-11-700 through 197-11-799 which also does not include a definition for FWHCA. FHWCA is defined in WAC 365-190-030. We suggest including the WAC definition in the code, or at least referencing it (SMC 21.04.040B.134).

Along with including a definition, the code could be clarified by having a section heading for "designation" which clearly lists the types of areas designated as FWHCAs. As currently written, it does not appear the code has any listing of what areas are designated as FWHCAs in the City. The list of designation areas should be prepared based on the list in WAC 365-190-130.2 to ensure all intended areas are included.

As a strategy to manage climate change impacts to FWHCAs, it is recommended to update and maintain regulations for habitats and species of local importance. This may include adding mapping resources to help identify the locations of potential habitats and species requiring protection and management.

6.2 Fish and Wildlife Habitat Corridors (SMC 21.03.020Z.2)

As documented in the 2023 Sammamish Existing Conditions Report, publicly available maps of wildlife habitat corridors in the City are provided. The City does have GIS data which appears to be based on King County's wildlife network maps. The available habitat corridor maps correspond to linear natural connections. Whether through land use changes since the model was developed or modeling inaccuracies, the mapped corridors occasionally do not all take the best path, and occasionally cross through urban development such as neighborhoods which impede wildlife movement. Given the imperative of managing and maintaining corridors and directive from the comprehensive plan, we recommend that corridors be inventoried to provide the level of detail appropriate for city-level planning and management. Corridors may be identified either through expert opinion or through spatially explicit modeling, each with certain advantages and disadvantages. Similar to other critical area maps, this would not capture all existing corridors or future re-established corridors.

Current or updated wildlife habitat corridor data could be added to the City's Property Map Tool as an interactive GIS layer or linked on the City website as a pdf map. This would improve application of landscape-scale planning to individual project sites.

7 WATERBODIES (SMC 21.03.020AA)

The existing Code contains regulations for streams and lakes in a section titled Waterbodies which is separate from the Fish and Wildlife Habitat Conservation Areas section.

Table 13. Waterbodies review summary.

Code Section	Title	Review Comment / Recommendations*	Reason for Recommendation
21.03.020AA.1	Streams- Development standards	1. Consider WDFW Riparian Management Zone guidance 2. Review and update buffer reduction standards 3. Consider adding standards to manage stormwater infrastructure	1. BAS 2. BAS 3. Climate change
21.03.020AA.2	Streams- Permitted alterations	None	
21.03.020AA.3	Streams- Mitigation requirements	None	
21.03.020AA.4	Ponds- Development standards	Remove from code	Section has been repealed
21.03.020AA.5	Lake Sammamish buffer- Permitted alterations	Remove from code	Section has been repealed
21.03.020AA.6	Lake management areas- Special district overlay	None.	

***** See discussion of comments/recommendations in the subparts below this table.

7.1 Streams- Development Standards (SMC 21.03.020AA.1).

7.1.1 Consider WDFW Riparian Management Zone Guidance

SMC 21.03.020AA.1.a prescribes standard buffers for streams, to be measured from the ordinary high water mark or top of bank. In 2020, the Washington Department of Fish and Wildlife (WDFW) came out with new guidance (Quinn et al. 2020) for protection of riparian areas that heavily emphasizes a shift in terminology from the concept of "stream buffers" to "riparian management zones" (RMZs). An RMZ is defined as "…a scientifically based description of the area adjacent to rivers and streams that has the potential to provide full function based on the SPTH [site potential tree height] conceptual framework." This differs from the use of "buffer(s)," as an RMZ is by definition wide enough to potentially provide full riparian function. Stream buffers are established through policy decisions and are clearly intended to protect streams, but may or may not be intended to provide full riparian function or a close approximation of it. The guidance recommends that a RMZ be delineated on a site-specific basis and be measured from the outer edge of the Channel Migration Zone (CMZ), where present, or from the Ordinary High Water Mark (OHWM) where a CMZ is not present.

As documented in the 2023 City of Sammamish CAO BAS study, WDFW's current recommendations for establishing RMZ widths are based primarily on a Site Potential Tree Height (SPTH) framework. The SPTH of an area is defined as "…the average

maximum height of the tallest dominant trees (200 years or more) for a given site class." Exceptions may occur where SPTH is less than 100 feet, in which case WDFW recommends assigning an RMZ width of 100 feet at a minimum based primarily on what is needed to provide adequate biofiltration and infiltration of runoff for water quality protection, but also in consideration of other habitat-related factors including shade and wood recruitment. A 100-foot width buffer is estimated to achieve 95 percent removal of most pollutants (Rentz et al. 2020).

As noted in the 2023 Sammamish BAS Report, WDFW's on-line mapping tool yielded the following ranges of values for SPTH in feet for various dominant forest types throughout Sammamish. Douglas-fir was the predominant species, and red alder are present to some extent.

Douglas-fir	187-231 feet
Red alder	105 feet

Preliminary review indicates that the riparian buffer width in the current CAO for Type F streams (150 feet), tends to be moderately under the high end of the range for Douglas-fir. 150 feet falls above the SPTH range for red alder, but below the upper end of the ranges for Douglas-fir.

WDFW recommends that the RMZ delineation steps be applied to all streams, whether or not they are fish-bearing, essentially resulting in a 100-foot minimum buffer recommendation for all streams. However, a narrower buffer for perennial or seasonal non-fish bearing streams is in line with other jurisdictions. The applicability of the Site Potential Tree Height (SPTH) tool in highly developed urban areas may not work as well as intended. Discussions on implementation of the RMZ guidance with WDFW are recommended.

7.1.2 Buffer Reduction (SMC 21.03.020AA.1.f)

The buffer modifications currently in the code should be reviewed in conjunction with the updates to the buffer width requirements. Depending on the buffer approach chosen some modifications may not be applicable, may not be compliant with BAS, or may need to be re-structured to fit with the chosen buffer tables. Incentivized buffer reduction options in the current code need to be reviewed for consistency with BAS guidance. BAS buffer recommendations are based on the assumption that the buffer is well vegetated with native species appropriate to the ecoregion. If the buffer does not consist of vegetation adequate to provide the necessary protection, then either the buffer area should be planted or the buffer width should be increased. A reduction of the standard buffer in these circumstances would generally not be supported.

7.2 Ponds- Development standards

7.2.1 Remove from code

This section has no content and notes that it has been repealed. Therefore, to simplify the chapter this section could be removed from the code and subsequent sections renumbered accordingly.

7.3 Lake Sammamish buffer- Permitted alterations

7.3.1 Remove from code

This section has no content and notes that it has been repealed. Therefore, to simplify the chapter this section could be removed from the code and subsequent sections renumbered accordingly.

8 Technical Terms and Land Use Definitions

Concurrent with this code update, recommend reviewing technical terms and land use definitions (SMC 21.04.040) for consistency with proposed code language and clarity.

9 References

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