



PLANNING COMMISSION REGULAR MEETING AGENDA

Wednesday, August 1, 2018
Mercer Island City Hall

CALL TO ORDER & ROLL CALL

6:00 PM

MINUTES

August 1, 2018

APPEARANCES

This is the time set aside for members of the public to speak to the Commission about issues of concern. If you wish to speak, please consider the following points:

- Speak audibly into the podium microphone
- State your name and address for the record
- Limit your comments to three minutes

*The Commission may limit the number of speakers and modify the time allotted.
Total time for appearances: 15 minutes*

REGULAR BUSINESS

Agenda Item #1: ZTR18-002 Critical Areas Code Amendment

Review of the Best Available Science (BAS) report related to wetlands, watercourses, and fish and wildlife habitat conservation areas. Identification of recommended amendments to the City's critical area regulations.

OTHER BUSINESS

Planned Absences for Future Meetings

Next Regularly Scheduled Meeting: August 14, 2018 at 6:00PM

ADJOURN

PLANNING COMMISSIONERS

Carolyn Boatsman
Tiffin Goodman, Vice-Chair
Daniel Hubbell, Chair
Jennifer Mechem
Lucia Pirzio-Biroli
Craig Reynolds
Ted Weinberg

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AGENDA TIMES ARE APPROXIMATE

**CITY COUNCIL CHAMBERS - MERCER ISLAND CITY HALL
9611 SE 36TH STREET; MERCER ISLAND, WA 98040**



DEVELOPMENT SERVICES GROUP

9611 SE 36TH ST., MERCER ISLAND, WA 98040

(206) 275-7605

TO: Planning Commission

FROM: Robin Proebsting, Senior Planner

DATE: July 25, 2018

RE: Critical Areas Code and Shoreline Master Program Updates (ZTR18-002): Best Available Science on Wetlands, Watercourses, and Wildlife Habitat Conservation Areas

Summary

At its August 1, 2018 meeting, the Planning Commission will begin review of the best available science pertaining to critical areas. State law (RCW 36.70A.172) requires that the best available science be used to develop critical areas regulations. Therefore, Planning Commission review and understanding of the attached scientific report will be a key component of its work on the Critical Areas Code update.

On August 1, 2018, staff is anticipating Planning Commission will:

1. Review the first of the BAS reports, sharing any questions that may have arisen; and
2. Identify major issues that the Commission would like to discuss at future meetings.

Background

The City's project consultant, ESA, has conducted research and developed a set of materials to support the Planning Commission's work on the Critical Areas Code update. These include:

- A. A report containing the best available science on the critical areas found on Mercer Island;
- B. Recommendations on how to address gaps between existing code standards and the latest science, and;
- C. A gap analysis matrix, summarizing recommended code updates.

The first volume of these materials, on the topics of wetlands, watercourses, and wildlife habitat conservation areas, is attached to this memo. At the Planning Commission's August 1, 2018 meeting, the Commission will receive a brief presentation on the best available science, then have the opportunity to ask questions of the consultant on the materials provided.

Subsequent meetings will build on the information and recommendations in the best available science report and gap analysis matrix. At the Planning Commission's August 15, 2018 meeting, the Commission will begin its review and discussion on policy issues raised in the best available science report. In an effort to make efficient use of the Commission's time staff suggest the approach of dividing issues into

two groups:

1. Major policy issues and issues where there is a significant gap between the existing City code and the recommendations of the best available science; and
2. “Clean up” items and issues where there is little gap between existing City code and the recommendations of the best available science.

Staff will then focus meeting time on the items included in the first group (“major issues”) and provide commissioners a written list of proposed code changes for items in the second group (“minor issues”) for review. Commissioners may identify any item on the minor issues list they feel merits discussion during a meeting with the entire Commission and move it to the major issues list.

Staff will provide the lists of major and minor issues with the memo to the Planning Commission in advance of the August 15th meeting. Preliminarily, staff expect major issues to be discussed at the August 15, 2018 meeting to include:

1. Buffer widths for wetlands and watercourses
2. Standards regulating piped watercourses;
3. Requirements for mitigation when alteration of a wetland or watercourse and associated buffer is proposed; and
4. Standards for bald eagle habitat protection.

Recall that the best available science is required to be included in the development of the Critical Areas Code. If the Planning Commission opts to depart from the best available science on a given issue, information in the record needs to identify the potential risks to the functions and values of the critical area and the measures taken to limit those risks (WAC 365-195-915—please see code excerpt in your binder).

Next Steps

Please carefully review the attached best available science report and gap analysis matrix and capture any clarifying or technical questions you have. Staff and the project consultant will answer these at the August 1, 2018 Planning Commission meeting. I can be reached at robin.proebsting@mercergov.org or 206-275-7717.

Attachments:

1. 2018 Best Available Science Report for Watercourses, Wetlands, and Fish and Wildlife Habitat Conservation Areas prepared by ESA, dated July 2018
2. Best Available Science Review and Gap Analysis Matrix prepared by ESA, dated July 24, 2018

CITY OF MERCER ISLAND CRITICAL AREAS ORDINANCE (CAO) UPDATE

2018 Best Available Science Report for Watercourses, Wetlands,
and Fish and Wildlife Habitat Conservation Areas

Prepared for
City of Mercer Island

July, 2018



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Best Available Science Review and Gap Analysis Matrix – Planning Commission Review Draft

ACRONYMS AND ABBREVIATIONS

BAS	Best Available Science
CAO	Critical Areas Ordinance
Corps	U.S. Army Corps of Engineers
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
FWHCA	Fish and Wildlife Habitat Conservation Area
GIS	Geographic Information System
GMA	Growth Management Act
ILF	In-lieu Fee
LIDAR	Light Detection and Ranging
MICC	Mercer Island City Code
NMFS	National Marine Fisheries Service
NRC	National Research Council
PHS	Priority Habitat and Species
RCW	Revised Code of Washington
SMA	Shoreline Management Act
SMP	Shoreline Master Program
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WRIA	Water Resource Inventory Area

INTRODUCTION

The City of Mercer Island (City) is in the process of updating its Critical Areas Ordinance (CAO) in accordance with the requirements of the Growth Management Act (GMA) (RCW 36.70A). The CAO is adopted into the Mercer Island City Code (MICC) within Title 19 (Unified Land Development Code), chapter 19.07. The GMA requires the use of best available science (BAS) in the development of critical areas policies and regulations. The types of scientific literature and technical information that constitute the term “best available science” are defined in the Washington Administrative Code (WAC) Chapter 365-195-905. This report reviews the existing CAO, additions to BAS and regulatory changes since the last update, and recent changes to the Mercer Island setting in the context of updates to BAS since 2005.

Environmental Science Associates (ESA) has prepared this report to provide technical information to City staff regarding the efficacy of the City’s current critical areas protection measures, and to provide recommendations for CAO updates that improve consistency with BAS. This report focuses on the following critical areas: Wetlands, Watercourses (streams), and other Fish and Wildlife Habitat Conservation Areas.

Background

The City of Mercer Island is a 6.2-square mile island municipality in King County, Washington. The city includes approximately 14.7 miles of shoreline along Lake Washington. The nearest adjacent municipalities are Seattle to the west and Bellevue and Newcastle to the east. Interstate 90 (I-90) crosses the northern portion of the island. Approximately 88 percent of the land on Mercer Island is zoned as single family residential, 95 percent of which is developed in residential uses. Mercer Island has 472 acres of park and open space lands which range from small neighborhood parks to larger recreational areas such as Luther Burbank Park and Aubrey David Park. 115 acres of natural-forested land are set aside in Pioneer Park and an additional 150 acres of public open spaces are scattered across the community.

Since 2000, the City of Mercer Island has seen relatively low population growth compared to other areas of King County, increasing from 22,699 residents in 2010 according to the U.S. Census to an estimated 24,210 residents in 2017 (an average of approximately 240 new residents per year, or approximately 1 percent annually). The estimated growth in the last seven years has more than tripled relative to the population change between 2000 and 2010, during which time the City added approximately 66 residents annually (2000 and 2010 US Censuses). Even with the higher rate in recent years, the City’s overall population growth between 2000 and 2017 has been 9 percent, compared to approximately 17% across all of King County. Between 2006 and 2012 698 new housing units were constructed across the City in a mix of single-family and multi-family units, accommodating residential population growth and further reducing supply of vacant and sub-dividable properties across Mercer Island (City of Mercer Island 2015 Comprehensive Plan).

In 2005, the City reviewed the BAS and updated the CAO to comply with the GMA. The 2005 update to the CAO was comprehensive, with BAS documented in *Use of Best Available Science in the City of Mercer Island Critical Areas Regulation for Watercourses and Wetlands – Peer Review* (Adolfson Associates, 2005). The 2005 BAS review also included an update to the watercourse and wetland inventories. More recently, the City completed a comprehensive update to its Shoreline Master Program (SMP), which was approved by the Washington State Department of Ecology (Ecology) on March 4, 2015. The SMP incorporates the provisions in the current CAO by reference (MICC 19.07.110.E.9).

METHODS

State Guidance for Consideration of BAS

According to the Growth Management Act (RCW 36.70A), Washington’s counties and cities are required to continually review, evaluate, and update comprehensive land use plans and development regulations using BAS, with the intent of identifying, designating and protecting critical areas and giving special consideration to anadromous fisheries. Critical areas include the following elements: wetlands, critical aquifer recharge areas, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas (RCW 36.70A.030).

BAS is defined as scientific information about critical areas, prepared by local, tribal, state, or federal natural resource agencies, or qualified scientific professionals that is consistent with the following criteria:

- Scientific information is produced through a valid scientific process that includes:
 - Peer review,
 - A discussion of methods used to gather information,
 - Logical conclusions,
 - Data analysis,
 - Information used in the appropriate context, and
 - References of literature and other sources of information used.
- Scientific information is obtained through a common source such as:
 - Research,
 - Monitoring,
 - Inventory,
 - Survey,
 - Modeling,
 - Assessment,
 - Synthesis, or
 - Expert opinion.

In the context of critical areas protection, a scientific process is one that produces reliable information useful in understanding the consequences of regulatory decisions, and in developing critical areas policies and regulations that are effective in protecting the functions and values of critical areas.

This report relies upon several regulatory guidance and BAS documents pertaining to critical areas. Current state guidance, including examples of effective regulatory language, pertaining to management of critical areas consistent with BAS and other GMA requirements can be found in *A Handbook for Reviewing Critical Areas Regulations* (Washington Department of Commerce, June 2018). This guidance is an update of the previous *Critical Areas Assistance Handbook: Protecting Critical Areas Within the Framework of the Washington Growth Management Act* (CTED, 2007). Scientific documents summarizing the BAS specific to each critical area are discussed in the following sections.

Report Structure and Gap Analysis Attachment

This report provides documentation of scientific literature and regulatory guidance for management of Mercer Island’s watercourses, wetlands, and fish and wildlife habitat conservation areas. Focus is on relevant information and guidance updates since the City’s 2005 comprehensive CAO review. Since that time new scientific findings have been published describing methods for improving the success of compensatory wetland mitigation and buffer effectiveness, among other topics.

For each critical areas type, this report provides summary and references to BAS updates and summary of the current CAO for purposes of identifying areas of inconsistency with agency guidance and BAS. We also focused on specific areas of BAS consistency (key update issues) identified by City staff during an in-person meeting on May 4, 2018 and during our independent assessment of BAS consistency.

To provide detailed assessment across all sections and subsections of the City’s CAO, ESA completed a gap analysis matrix (attached to this report) to identify gaps and document consistency between CAO provisions and GMA regulations, relevant agency guidance, and BAS published since 2005. The gap analysis matrix provides an assessment of general consistency and the corresponding rationale and source for each gap identified. In addition to identifying provisions inconsistent with state law or recent science, our review identified several areas where the protection of critical areas could be improved by adding, removing, clarifying, and or rearranging sections and subsections of the code to make them clearer and easier to implement. We categorized our assessment as follows:

- **Gap or Missing protection.** New code provision should be added to ensure compliance with GMA and BAS.
- **Consistency with BAS.** Code provision either does or does not, in our opinion, meet best available science or state guidance. Existing provision would result in detrimental impacts to critical areas and their functions and values.
- **Clarity/ User friendliness.** Code provision is difficult to administer due to clarity, readability, and understandability.
- **Internal consistency.** Code provision is redundant (included in multiple sections) or is located in an inappropriate section.
- **Update to reflect current City procedures.** Code provision may not accurately reflect the current administrative procedures used by City staff in implementing the CAO.

The basis for each item identified is explained in the matrix and a citation is provided where applicable.

Consideration of Neighboring Jurisdiction Approaches

In addition to BAS, the ESA team also reviewed recently updated critical area codes from other neighboring jurisdictions to support City staff, Planning Commission, and City Council in considering key update issues. ESA did not independently assess BAS documentation and consideration from the other neighboring jurisdictions. For each key update issue, review of BAS consistency is provided, followed by a summary of neighboring jurisdiction approaches, and ESA’s recommended for update options for City consideration. Our recommendations also reflect our professional judgment and experience assisting numerous cities and counties with code interpretation and administration.

Below is a list of CAOs from neighboring jurisdictions that we reviewed. We have focused on nearby Lake Washington and Puget Sound waterfront communities that have recently completed CAO updates. Though some of these jurisdictions are more developed than others, they all include significant areas of largely established residential use patterns occurring near lake or marine shorelines. We have picked these jurisdictions based on similarities to Mercer Island including landscape patterns, community, presence of

critical areas and sensitive species, geology, and land use. We believe that this combination will present a range of critical areas management strategies that will be useful to consider for Mercer Island's update.

- Bainbridge Island ([CAO](#) most recently updated in 2018)
- Medina ([CAO](#) most recently updated in 2015)
- Edmonds ([CAO](#) most recently updated in 2016)
- Lake Forest Park ([CAO](#) most recently updated in 2017)
- Kirkland ([CAO](#) most recently updated in 2017)

WATERCOURSES

Watercourses (i.e., streams) and other “waters of the state” are considered Fish and Wildlife Habitat Conservation Areas as defined by the WAC. This section summarizes new scientific literature and regional policy concerning watercourse protection and management, provides an assessment of current CAO provisions, and summarizes recommendations for updates to ensure consistency with BAS. The current City CAO provides standards for protection of watercourses in MICC Section 19.07.070.

Updates to Scientific Literature

Updates to the scientific literature related to streams and watercourses have been undertaken by state agencies such as Washington Department of Fish and Wildlife (WDFW), Washington Department of Natural Resources (WDNR) and Washington Department of Ecology (Ecology). New scientific information is summarized below relating to stream typing, riparian buffers, protection of salmonid habitat, and stream restoration.

Stream Typing

State agencies such as WDFW and Ecology recommend use of the WDNR stream typing system in Title 222 WAC, the forest practices regulations. The latest stream typing by WDNR classifies streams into Type S (shoreline), Type F (fish-bearing), Type Np (non-fish-bearing, perennial flow) and Type Ns (non-fish-bearing, seasonal flow). The stream typing system codified in MICC 19.07.070 refers to the outdated numeric state stream typing, where streams are classified as Type 1 through 5 waters.

Riparian Buffers

Riparian buffers are the transition zone between streams and upland terrestrial habitat. Riparian buffers offer a variety of ecological functions, such as: 1) providing shade to the stream in summer, 2) stabilizing the stream bank, 3) providing nutrient input to aquatic organisms, 4) serving as a source of large woody debris to create in-stream habitat, 5) assisting with flood retention, 6) providing habitat and 7) allowing an area for stream channel migration (Knutson and Naef, 1997). When discussing BAS for buffers and buffer effectiveness for fish and wildlife habitat conservation areas, one must distinguish between stream/riparian buffers (those areas providing functions related to fish habitat and stream processes) and habitat buffers (areas including riparian buffers and the terrestrial areas adjacent to them which provide wildlife functions for a variety of species).

Recommendations for stream buffers have remained relatively similar since the City's last CAO update. Recommendations for stream buffer widths vary from 75 feet to well over 300 feet to protect a suite of riparian ecological functions (Brennan et al., 2009; May, 2003; Knutson and Naef, 1997). Some of these riparian ecological functions (e.g., elk habitat, migratory corridors, and protections for specific priority species) may not be applicable to the urban or suburban land use setting like Mercer Island. WDFW

recommends riparian zones between 150 to 250 feet based upon the stream type, channel width, flow and the needs of wildlife in riparian areas (Knutson and Naef, 1997). Specific to salmonids, Ecology has published guidance on minimum riparian buffer widths for implementing riparian restoration or planting projects that use water quality-related state and federal pass-through grants or loans (Appendix L in Ecology, 2013). The buffer widths are recommended by the National Marine Fisheries Service (NMFS) to help protect and recover Washington’s salmon populations. NMFS recommends a 100-foot minimum buffer for surface waters that are currently or historically accessed by anadromous or listed fish species and a 50-foot buffer for surfaces that do not have current or historical access.

WDFW has recently updated documentation of science relevant to understanding and implications for management of riparian ecosystems (*Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications*, May 2018). The Volume 1 synthesis is organized around riparian functions, identifying studies and BAS for maintenance of these functions. Consistent with other BAS sources noted above and WDFW’s previous guidance (Knutson and Naef, 1997), including review of much of the same scientific literature, this synthesis shows that buffers necessary to support all riparian functions vary significantly. Of note, WDFW highlights studies of riparian shading and maintenance of stream temperature which suggest that an intact riparian buffer must be a minimum of 110 feet wide to avoid water temperature increases when the surrounding landscape is highly disturbed (in the case of the studies referenced, clear-cut; see Figure 9.3).

Along with Volume 1, WDFW has released a public review draft version of Volume 2, provided as “an implementation manual for how to protect functions and values of riparian ecosystems... ..using best available science synthesized in Volume 1” (*Riparian Ecosystems, Volume 2: Management Recommendations*, Public Review Draft May 2018). The Volume 2 draft report acknowledges challenges associated with applying riparian BAS, which primarily is from studies focused on forestry and agricultural settings, into urban areas. The report highlights that ecological functions associated with riparian areas still apply within urban settings, and focuses on “consideration of current conditions when reviewing regulations with the ultimate goal of maintaining remaining functions through regulations and improving functions through voluntary restoration.” Focus is on maintaining riparian vegetation and lateral connectivity that remains, and providing standards that prioritize and incentivize protection and restoration of areas closest to the stream. The report also recommends implementation of other management measures in addition to riparian buffer standards within urban settings, including effective stormwater management and use of low impact development (LID) approaches for surrounding development (see Section 3.10 in WDFW’s *Riparian Ecosystems, Volume 2*).

Salmon and Fish Habitat and Biodiversity

State, federal, and tribal agencies have prepared many of the latest documents pertaining to fish and wildlife habitat conservation areas. Much of this science is related to protecting salmon and fish habitat. In March 2006, the U.S. Fish and Wildlife Service (USFWS) published the Nearshore Habitat Use by Juvenile Chinook Salmon in Lentic Systems of the Lake Washington Basin (Tabor et. al., 2006). The report summarized studies performed in 2003 and 2004 to better understand the movement of juvenile Chinook salmon in nearshore areas of Lake Washington. A total of three sites were surveyed between February and June of 2004 and were located on the east, north, and northwest sides of the island. Salmon densities at all three sites peaked in mid-May. Though no tributary study areas were established on Mercer Island, the report also highlights the importance of non-natal streams with a wide variety habitat features for the rearing and refuge of juvenile Chinook.

In 2009, the Washington Department of Fish and Wildlife (WDFW) published *Land Use Planning for Salmon, Steelhead and Trout: A Land Use Planner’s Guide to Salmonid Habitat Protection and Recovery*

as part of an initiative to integrate local planning programs with salmon recovery efforts (Knight, 2009). The guidance provides science-based management recommendations in the form of model policies and regulations to be used by local jurisdictions during GMA and Shoreline Management Act SMA planning and periodic updates. Recommendations are organized by topic areas that include specialized management programs (e.g., stormwater) or habitat elements (e.g., nearshore areas) to protect salmonid habitat function from development impacts.

In September, 2017 the WRIA 8 Salmon Recovery Council published the *Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Recovery Plan – 10-year Update (2017 Plan)*. The 2017 Plan, updates the previous plan (WRIA 8 Salmon Recovery Council, 2005) by drawing on current science to develop new quantitative habitat goals and new strategies to meet these goals. Appendix E describes the 20 updated or revised recovery strategies; and Appendix F gives a list of site-specific projects. Four specific projects to improve rearing and refuge habitat were identified with the City. These include the following:

- Groveland Beach Park Restoration – proposed restoration activities include removal and replacement of existing docks, removal of shoreline armoring and wooden bulkhead, and installation of riparian vegetation along the shoreline.
- Clarke Beach Park Restoration – proposed restoration activities include the removal of 700 linear feet of bulkheads, a wavebreak, and a fill jetty; shoreline grading to create a shallow beach with gravels; placement of large woody debris; and the installation of native vegetation.
- Luther Burbank Shoreline Restoration – proposed restoration activities include a multi-phased project that will improve up to 4,000 linear feet through the removal of bulkheads and the installation of native vegetation. Initial work on two sections of this project has already been completed.

Current Watercourse Provisions and Key Update Issues

The watercourses section of the City’s CAO needs to be updated in a few key areas to improve its consistency with BAS and current agency guidelines. A summary of key issues and update recommendations for the watercourses section are provided below.

Key Issue #1 for Watercourses – Stream Typing System

Current Code and BAS Consistency

The City’s current typing system and watercourse definitions refer to an outdated state stream typing system (MICC 19.07.070.A; see Table 1 below). Generally, the outdated system types streams based on criteria consistent with the current DNR stream classification system, with differentiation between types based on use by fish, and for non-fish use streams whether or not the watercourse has year-round or seasonal flow. The City additionally includes ‘Restored Watercourse’ definition, for any reach of watercourse (whether Type 1, 2, or 3) created from the opening of a previously piped or channelized watercourse. See additional discussion on piped watercourse requirements in Key Issue #4 below. WDNR’s current stream typing system replaces numerical types with types S, F, Np, and Ns (Table 1). This system is required to be used by GMA, and provides a consistent system that maintains a basis in key physical and ecological differences across watercourses.

Neighboring jurisdiction approaches

Four of the five neighboring jurisdictions have updated CAOs to the WDNR forest practices water typing system. Medina maintains a numerical typing system that is consistent with Mercer Island’s current adopted standards.

Options for updates

ESA recommends implementation of the current WDNR forest practices water typing system. Consistency between the existing typing system and this updated system should minimize implications (Table 1). Additionally, ‘restored watercourse’ should be removed as a defined watercourse type, encouraging application of standard buffers are applied for all streams based on the updated typing system.

Table 1. Crosswalk between the City’s currently adopted watercourse typing system and the WDNR forest practices typing system with specific notes and recommendations.

Current City Typing with Definition	Proposed	State (WDNR) Definition and Notes
Not currently included in CAO (although all of Lake Washington shoreline is regulated by the City’s SMP)	Type S	<ul style="list-style-type: none"> Waterbodies that are designated “shorelines of the state” as defined by the SMA (90.58.030 RCW) and regulated in MICC 19.07.110.
Type 1 <i>Watercourses or reaches of watercourses used by fish, or are downstream of areas used by fish..</i>	Type F	<ul style="list-style-type: none"> Type F represents all waters (perennial or seasonal) that are known to be used by fish <u>OR</u> contain fish habitat as defined by DNR criteria Update to definition should include reference to DNR criteria for streams that contain fish habitat
Type 2 <i>Watercourses or reaches of watercourses with year-round flow, not used by fish..</i>	Type Np	<ul style="list-style-type: none"> Type Np represents perennial waters that do not contain fish or fish habitat. Definition between current Type 2 and proposed Type Np are generally consistent.
Type 3 <i>Watercourses or reaches of watercourses with intermittent or seasonal flow and not used by fish..</i>	Type Ns	<ul style="list-style-type: none"> Type Ns represents intermittent waters that do not contain fish or fish habitat and have intermittent flows Definition between current Type 3 and proposed Type Ns are generally consistent.
Restored Watercourse. <i>Any Type 1, 2 or 3 watercourses created from the opening of previously piped, channelized or culverted watercourses.</i>	<i>Remove as a separate type</i>	<ul style="list-style-type: none"> Defining ‘restored watercourse’ as a separate stream type is inconsistent with BAS, which supports implementation of standard buffer widths based on fish use / fish habitat and flow characteristics wherever feasible. As alternative to separate typing for restored watercourse, buffer allowances should be provided to encourage daylighting and stream restoration.

Key Issue #2 for Watercourses – Riparian Buffer Widths

Current Code and BAS consistency

The City’s current watercourse buffer widths are not consistent with the BAS and in general, are lower than the protection recommendations in the statewide guidance mentioned above (Brennan et al., 2009; May, 2003; Knutson and Naef, 1997; WDFW, 2018; Appendix L in Ecology, 2013,).

Neighboring jurisdiction approaches

Required watercourse buffers for the four neighboring jurisdictions that have revised their stream typing to current standards are presented in the table below.

Table 2. Watercourse Buffer Widths in Neighboring Jurisdictions

Stream Type	Mercer Island (current CAO)	Bainbridge Island	Medina	Edmonds	Lake Forest Park	Kirkland
	Watercourse Buffer Widths					
S	NA	NA	NA	150	NA	NA
F	75 (Type 1)	200	100 (Type 1)	75 – 100 ^a	115	100
Np	50 (Type 2)	100	75 (Type 2)	50	50	50
Ns	25 (Type 3)	50 – 75 ^b	50 (Type 3)	40	50	50

^a100-foot buffer if stream is anadromous fish bearing and adjacent to stream reaches with anadromous fish access; 75-feet if anadromous fish bearing and adjacent to reaches without anadromous fish access.

^b100 feet if stream is connected to a Type F stream; 50 feet if not connected to a Type F stream

Medina maintains the same stream typing as the City, however buffers for each type are 25 feet wider. Buffer widths are also generally wider for other neighboring jurisdictions, with a minimum 100-foot (and up to 200-foot) buffer provided for Type F streams providing salmonid habitat. Similar to current Mercer Island requirements, all buffer reduction proposals must include riparian and/or other functional enhancements.

Options for updates

- Increase watercourse buffer widths to reflect BAS guidance. At a minimum, we suggest buffers to Type Ns and Np streams be increased to 60 feet. Type F streams with anadromous fish habitat should be at least 120 feet to be consistent with the body of scientific literature protecting stream functions found in an urban setting (FEMAT 1993; Knutson and Naef, 1997; Appendix L in Ecology, 2013). Fish bearing streams that are not used by anadromous fish should be at least 80 feet.
- Buffer averaging with enhancement should be prioritized over buffer reductions with enhancement. Buffer averaging results in the same amount of buffer area, while buffer reductions result in an overall net loss of riparian area.
- Update provisions for buffer reductions with enhancement or for buffer averaging to be no greater than 25 percent of the standard buffer width and include the list of mitigation measures from Ecology’s Table XX.2 (Bunten et al., 2016) to further protect watercourses. We suggest that

buffer mitigation measures (e.g., enhancement plan and elements from Table XX.2) be required for consistency with BAS and to achieve “no net loss” of ecological function.

Key Issue #3 for Watercourses – Mitigation sequencing is not required to average or reduce watercourse buffers.

BAS consistency

The City’s current buffer modification requirements include several mitigation options but does not require mitigation sequencing. BAS and state and federal laws require applicants to avoid and minimize impacts whenever reasonable. When a modification to a critical area or buffer is proposed the modification shall be avoided, minimized, or compensated for, as outlines by WAC 197-11-768, in the following order of preference:

- (1) Avoiding the impact altogether by not taking a certain action or parts of an action;
- (2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
- (3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- (4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
- (5) Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or
- (6) Monitoring the impact and taking appropriate corrective measures.

Neighboring jurisdiction approaches

All five neighboring jurisdictions require mitigation sequencing in some way. Four of the five jurisdictions require development applications that propose to alter critical areas and/or their buffers to show the utilization of mitigation sequencing as listed above. The City of Edmonds requires a “discussion of efforts to avoid and minimize potential impacts to resources” as a requirement of the Critical Areas Report.

Options for updates

ESA recommends the City include a section requesting mitigation sequencing be utilized for all development proposals that would alter a critical area or its buffer. This section should clearly present all steps to mitigation, give a list of preferred mitigation location and types (i.e. on-site in-kind, off-site in-kind), and other associated requirements such as monitoring, maintenance, contingency plans, and bond requirements. These recommendations could be included in general requirements of the CAO or under specific critical area sections.

Furthermore, the list of mitigation options that the code official may consider for buffer modifications under MICC 19.07.070 appears to be limiting and likely not relevant to all applications. We recommend these options be removed as additional options reviewed on a project-by-project basis may provide a larger functional lift.

We also recommend that mitigation requirements for streams be distinct from mitigation requirements for wetlands and not references as currently in MICC 19.07.080.C.

Key Issue #4 for Watercourses – Requirements for Piped Watercourses

BAS consistency

Current BAS does not provide regulatory recommendations for piped watercourses. However, there is BAS supporting the restoration of piped streams in order to provide enhancement of fish and wildlife aquatic and riparian habitats (ELI et al., 2016). In order to maintain opportunity to implement and encourage restoration of piped watercourse segments consistent with this BAS, it could be reasonable for the City to require a standard buffer zone or building setback around the alignment of piped watercourses.

Neighboring jurisdiction approaches

None of the five neighboring jurisdictions apply buffers to piped watercourses. Kirkland encourages the daylighting of streams in their CAO and provides several provisions and requirements in Kirkland Zoning Code (KZC) 90.75 and KZC 90.80, including a Stream Daylighting Plan and reduced buffer allowance for daylighted streams.

Options for updates

Piped watercourses provide little to no ecological function. As such, requiring a vegetated buffer surrounding the alignment of an existing piped watercourse is of little ecological benefit. That said, maintaining piped watercourse alignments to be free from structures and other improvements provides opportunity for future daylighting and restoration. Therefore, we recommend replacing piped watercourse buffer requirements with a standard setback from the pipe alignment. No structures should be allowed in this standard setback.

Because BAS supports the daylighting of streams, and the City's intention is to protect piped watercourses to accommodate and incentivize future daylighting, we recommend the code be revised to include specific language clarifying this intention. Language regarding the daylighting and restoration of piped watercourses can be found in Section 2.2.3.2 of the City's 2005 BAS Report (Adolfson Associates, 2005). Because the piped portions of the stream are considered a critical area, we recommend that piped watercourses be regulated under the same typing as the portion of the watercourse upstream from the pipe. The standard buffer required for the upstream segment would be required as a building setback from the pipe alignment. If the entirety of the watercourse is piped up to the natural headwaters, regulation as a Type Np or Ns stream would be required.

We recommend that the updated CAO also establish a minimum setback width such that allowances for reduction do not exceed 25% of the standard setback. However, to incentivize daylighting, a new allowance should be provided for setback reduction beyond 25% when daylighting with channel and riparian restoration (or an ecologically equivalent or greater proposal) is provided. Opportunities to daylight existing piped watercourses should be encouraged to the greatest extent feasible; however, at no point within a daylighted stream segment should the minimum buffer be reduced to less than 15 feet of width.

Conclusions and Summary of Code Recommendations

Mercer Island is inconsistent with BAS for management of watercourses and associated buffers in several key areas described above. In order to improve consistency with BAS, we recommend the City revise the watercourse classification system, increase the standard buffers for watercourses, require mitigation sequencing when impacts to watercourses or their buffers are proposed, and either remove the standard buffer requirement for piped watercourses, or clearly define the intention of maintaining a buffer around piped watercourses (presumably to encourage and provide adequate room for future daylighting efforts).

WETLANDS

Wetlands are specifically identified for protection as a critical area by the Growth Management Act (WAC 365-190-080[3]). The current CAO provides standards for protection of wetlands in MICC Section 19.07.080. This section summarizes new scientific literature and regional policy concerning wetlands protection and management, provides an assessment of current CAO provisions, and summarizes recommendations for updates to ensure consistency with BAS.

Updates to Scientific Literature

In general, the latest documents in the record pertaining to wetlands have been prepared by state and federal agencies. Since the City's last major CAO update, new scientific findings have been published describing wetland delineation methods, wetland rating systems, methods for assessing wetlands on a watershed-based and landscape-scale, alternative mitigation strategies (mitigation banking and in-lieu fee programs), improving the success of compensatory mitigation, and buffer effectiveness. For example, the Washington Department of Ecology (Ecology) and Washington Department of Fish and Wildlife (WDFW) released a two-volume BAS document that is still the primary source of new information for wetland management: *Wetlands in Washington State – Vol. 1 A Synthesis of the Science* (Sheldon et al. 2005) and *Vol. 2 Guidance for Protecting and Managing Wetlands* (Granger et al. 2005).

Wetland Delineation Methods

In 2010, the U.S. Army Corps of Engineers released the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coasts* (Corps, 2010). The regional supplement updates portions of the 1987 Corps' Wetland Delineation Manual and provides additional technical guidance and updated procedures for identifying and delineating wetlands. State law requiring the *Washington State Wetlands Identification and Delineation Manual* (Ecology, 1997) was repealed in 2011, and the state manual is no longer required or supported by Ecology. The Regional Supplement is now required by state law (WAC 173-22-035).

Wetland Rating Systems

Ecology released an update to their wetland rating system, *the Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby, 2014), that went into effect January 2015. While most of the concepts and specific function-specific rating questions in the 2014 updated manual remain the same as that in the 2004 manual, the 2014 system has some notable differences. The updated wetland rating manual includes a new scoring range (i.e., between 9 and 27 under the updated manual versus 1 to 100 in the 2004 manual) that is based on a qualitative scale of functions from high, medium, or low. The new approach to scoring wetland functions is more scientifically supportable (Hruby, 2014). The 2014 updated manual also includes new sections for assessing a wetland's potential to provide functions and values on a landscape-scale.

Mitigation for Wetland Impacts

One of the most significant changes in BAS since Mercer Island's last code update involves alternative mitigation strategies. According to the National Research Council (NRC), compensatory mitigation implemented in the past, particularly on-site mitigation installed by the permittee, has frequently been unsuccessful and has not achieved the national policy of "no net loss" of wetland area and functions (NRC, 2001). Traditionally, permit applicants have constructed mitigation projects to compensate for effects to aquatic resources (e.g., wetlands, streams, marine waters) with limited oversight and enforcement of mitigation requirements. This type of mitigation is referred to as "permittee-responsible" mitigation. Additionally, alternative forms of mitigation, such as mitigation banks and in-lieu fee (ILF) programs, and advance mitigation were not established uniformly across the country, or within individual

states, and there were numerous cases where alternative mitigation programs were operated unsuccessfully.

To address these mitigation deficiencies, in early 2008 the US Army Corps of Engineers (Corps) and Environmental Protection Agency (EPA) released revised regulations governing compensatory mitigation for authorized impacts to waters of the US, including wetlands. The Federal Rule, formally known as the Compensatory Mitigation for losses of Aquatic Resources; Final Rule, lays out criteria and performance standards designed to improve the success and quality of mitigation activities (Corps, 2008).

The Federal Rule emphasizes a watershed approach to mitigation as part of the planning, implementation, and management of mitigation projects. A watershed approach is an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed; it involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs.

Alternatives to permittee-responsible mitigation are increasingly implemented within Washington State and around the country to compensate for authorized effects to aquatic resources. Common forms of alternative mitigation include:

- *Mitigation Banks*—restoring, establishing, enhancing, and/or preserving aquatic resources through funds paid to a public or private Sponsor to satisfy compensatory mitigation requirements for Corps permits. At banks, the Sponsor has already secured a mitigation site and initiated mitigation activities before fees are accepted. Typically, mitigation banks exist at one location and the Corps does not have authority over bank expenditures.
- *In-Lieu Fee (ILF) Programs*—restoring, establishing, enhancing, and/or preserving aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for Corps permits. In-lieu fee programs accept mitigation fees before securing and implementing projects. These programs implement mitigation at multiple sites as funds become available and after the Corps approves project funding.
- *Consolidated Off-site Mitigation*—restoring, establishing, enhancing, and/or preserving aquatic resources through funds paid to a public or private entity Sponsor. Mitigation typically occurs at a single location in a phased approach; as compensatory mitigation fees are paid to the public or private entity by permit applicants, portions of the mitigation site are constructed.
- *Advance Mitigation*—restoring, establishing, enhancing, and/or preserving aquatic resources, undertaken by public or private permit applicants in advance of permitted impacts. This type of mitigation is considered permittee-responsible compensatory mitigation because only the permit applicant who implements the advance mitigation may use it to satisfy their compensatory mitigation obligations.

Alternative forms of mitigation do not change the requirements for permit applicants to follow the prescribed “mitigation sequence” of avoid, minimize, rectify, reduce, and compensate for impacts. These are step-wise requirements under federal and state laws that mandate permit applicants to demonstrate that avoidance and minimization measures have been taken before the remaining aquatic resource effects are determined unavoidable. Avoidance and minimization measures occur during project design and are intended to avoid and reduce a project’s effects prior to construction. Once a determination is made that project effects are unavoidable, compensatory mitigation is required. The above types of compensatory mitigation must be used, if available, instead of traditional on-site mitigation projects. In 2015, the Corps permit system was analyzed to determine how the 2008 Rule has affected the number or type of compensatory mitigation projects (IWR 2015). The report states that over the past 5 years, the Corps issued 56,400 permits or authorizations each year nationally, with only 10% of these authorizations

actually requiring compensatory mitigation. As a result of the 2008 rule, project impacts are being avoided and minimized with fewer projects requiring compensatory mitigation at banks.

Compensatory Mitigation

Where compensatory mitigation (permittee-responsible) is the best option for mitigating wetland impacts, recent guidance has been developed to improve mitigation success. Ecology, in coordination with the U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA), developed a two-part guidance document intended to improve the quality, consistency, and effectiveness of compensatory mitigation in Washington State.

Part 1 of the document, *Wetland Mitigation in Washington State—Part 1: Agency Policies and Guidance* (Ecology Publication #06-06-011a, March 2006a), provides regulatory background and outlines information that regulatory agencies use. Some of this information has been superseded by recent guidance discussed in the Alternative Mitigation section; however, wetland mitigation ratios listed in this document are the basis for many local jurisdictions' mitigation requirements. Part 2 of the document, *Wetland Mitigation in Washington State—Part 2: Developing Mitigation Plans* (Ecology Publication #06-06-011b, March 2006b) provides specific technical guidance on developing a compensatory wetland mitigation plan.

As an alternative to using mitigation ratios, Ecology developed *Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington* (Hruby, 2012) for estimating whether a project's compensatory mitigation plan adequately replaces lost wetland functions and values. Termed the "Credit-Debit Method," this manual uses a functions and values-based approach to score functions lost at the project site (i.e., "debits") compared to functions gained at a mitigation site (i.e., "credits"). A mitigation project is considered successful when the "credit" score for a compensatory mitigation project is higher than the "debit" score. Based on our local experience, the Corps and Ecology are increasingly relying on the Credit-Debit Method instead of mitigation ratios alone.

Wetland Buffers

Wetlands in Washington State – Vol. 1 A Synthesis of the Science (Sheldon et al., 2005) synthesizes literature related to wetland buffers and buffer effectiveness among other wetland-related topics. In 2013, Ecology published *Update on Wetland Buffers: The State of the Science, Final Report* which updated the 2005 synthesis with a literature review of scientific documents published between 2003 and 2012 (Hruby, 2013). The 2013 update reviewed each of the conclusions in the Sheldon et al. (2005) report and referenced 144 scientific articles.

Research indicates that uplands surrounding wetlands and streams can serve as critical habitat for some species, a concept that expands the notion of a buffer beyond simply protecting wetland and riparian functions to protecting aquatic-dependent species (Hruby, 2013; Semlitsch and Jensen, 2001). Several literature sources have suggested that these terrestrial areas adjacent to wetlands and streams be termed "core habitat." Studies on wetland-dependent species report that core habitat needs to extend between 1,000 feet to 0.6 miles from the wetland edge to be effective in supporting population survival; however, there is little information on how much connectivity is needed between a critical area and core habitat (Hruby, 2013). Research indicates that stream/riparian buffers alone will not be enough to protect certain species and that a broader approach to protecting wildlife is needed, especially in areas that are intensely developed (Hruby, 2013; Semlitsch and Jensen, 2001)

The updated buffer synthesis confirmed that buffers perform an important water quality functions by trapping pollutants before they reach a wetland. Generally, the wider the buffer, the more effective it is at protecting water quality; however, recent research reveals that several other factors contribute to the

effectiveness of buffers in protecting water quality functions. These factors include slope, type of vegetation, surface roughness, soil properties, and type and concentration of pollutants. Specifying only the width of a buffer as a means for protecting water quality functions can be complicated and may not address these other factors (Hruby, 2013). With respect to protecting habitat quality, research in the past decade reveals that wider buffers are needed to protect wetland-dependent species, many of which require larger areas of relatively undisturbed uplands for survival (Hruby, 2013). Previously, Sheldon et al. (2005) recommended buffer widths between 50 and 300 feet for the protection of wildlife habitat, depending on site specific factors. The more recent recommendations specify buffer widths that go beyond 300 feet for many wildlife species. The *Planner's Guide to Wetland Buffers for Local Governments* prepared by the Environmental Law Institute (42) recommends a range of 100–1000ft for wildlife, 30–100ft for sediment removal, 100-180ft for nitrogen removal, and 30-100ft for phosphorus removal.

State guidance on wetland buffer widths offer both a combined fixed-width and variable-width approach, with a minimum buffer prescribed based on a wetland's category and an additional buffer based on increasing habitat points (Bunten et al., 2016; "Table XX.1" revised July 2018). Ecology (Bunten et al., 2016) acknowledges that in urban communities standard buffer widths may be difficult to achieve due to existing structures. When a development project requests a reduction to a standard buffer width, Ecology suggests that the local jurisdiction require documentation to demonstrate that a smaller buffer will protect wetland functions and values. Ecology also suggests that, additional mitigation measures may be necessary to ensure "no net loss" of wetland functions and values (Granger et al., 2005). Mitigation measures that can be used to protect wetlands in these instances include requiring noise-generating activities be located away from wetland, routing toxic runoff away from wetlands, and planting dense native vegetation to discourage disturbance (Bunten et al., 2016; "Table XX.2" revised July 2018). The model code recommends that standard buffers should not be reduced below 25 percent of the standard buffer with (Bunten et al., 2016). Granger et al. (2005) notes that for some situations where the buffer is composed of non-native vegetation, and therefore providing limited functions and values, simply applying a fixed width buffer may fail to provide the necessary characteristics to protect a wetland's functions. In these cases, it can be better to restore the buffer through enhancement activities.

In July 18, 2018, Ecology revised buffer guidance on wetlands. The 2018 revisions to wetland buffer tables were released by Ecology via email on July 18, 2018. In previous versions of the wetland table, low habitat function was represented by a score of 3 or 4 points and moderate habitat function by a score of 5 to 7 points. Ecology conducted an analysis of habitat scores across over 200 reference sites and found that wetlands that scored 3,4, or 5 habitat points were more similarly distributed to those scoring less than 19 points in the 2004 version. In response, Ecology modified a low habitat score as earning 3, 4, or 5 habitat points, and moderate habitat score as earning 6 and 7 habitat points.

Overview of Current Wetland Provisions

The wetlands section of the CAO needs to be updated in a few key areas to improve its consistency with BAS and current agency guidelines, as detailed in the attached matrix. A summary of key recommendations follows:

Key Issue #1 for Wetlands – Update Wetland Rating to the 2014 State Rating System

Current Code and BAS Consistency

The City’s current code references the outdated Washington State Wetland Rating System for Western Washington (2004) wetland rating manual (MICC 19.07.080.B.). The updated wetland rating manual includes a new scoring range (i.e., between 9 and 27 under the updated 2014 manual versus 1 to 100 in the 2004 manual). Both wetland rating systems are based on a qualitative scale of functions from high, medium, or low (Table 3).

Neighboring jurisdiction approaches

All neighboring jurisdictions have updated CAOs to the updated wetland scoring system using the Washington State Wetland Rating System for Western Washington: 2014 Update (Hruby, 2014).

Options for updates

ESA recommends updating the City’s wetland classification system to the Washington State Wetland Rating System for Western Washington: 2014 Update. Consistency with Ecology’s updated system eliminates the need to rate wetlands according to multiple different standards.

Table 3. Comparison of the City’s currently adopted 2004 wetland rating system and the 2014 updated wetland rating system.

	2004 Rating System	2014 Rating System
Category I	(a) wetlands that are identified by scientists as high quality or high function wetlands; (b) bogs larger than one-half acre; (c) mature and old-growth forested wetlands larger than one acre; or (d) wetlands that are undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.	(a) relatively undisturbed estuarine wetlands larger than one (1) acre (b) wetlands of high conservation value that are identified by scientists of the Washington Natural Heritage Program/DNR (c) bogs (d) mature and old-growth forested wetlands larger than one (1) acre (e) wetlands in coastal lagoons (f) interdunal wetlands that score eight (8) or nine (9) habitat points and are larger than one (1) acre (g) wetlands that perform many functions well (scoring 23 points or more)
Category II	(a) wetlands that are identified by scientists as containing “sensitive” plant species; (b) bogs between one-quarter and one-half acre in size; or (c) wetlands with a moderately high level of functions.	(a) estuarine wetlands smaller than one (1) acre, or disturbed estuarine wetlands larger than one (1) acre (b) interdunal wetlands larger than one (1) acre or those found in a mosaic of wetlands (c) wetlands with a moderately high level of functions (scoring between 20 – 22 points)
Category III	Wetlands that do not satisfy Category I or II criteria, and have a moderate level of functions.	(a) wetlands with a moderate level of functions (scoring between 16 and 19 points)

		(b) can often be adequately replaced with a well-planned mitigation project (c) interdunal wetlands between 0.1 and one (1) acre
Category IV	Wetlands that do not satisfy Category I, II or III criteria; and have the lowest level of functions; and are often heavily disturbed.	Wetlands that have the lowest levels of functions (scoring fewer than 16 points) and are often heavily disturbed.

Key Issue #2 for Wetlands – Update Wetland Buffer Widths

Current Code and BAS Consistency

The City’s current standard wetland buffer widths are not consistent with BAS and does not take habitat score into account when establishing buffer widths as recommended in Bunten et al. (2016), including the “July 2018 Modifications for Habitat Score Ranges” document provided by Ecology. Table 4 shows a comparison of current wetland buffers and buffers recommended in BAS.

Table 4. Comparison of the City’s current Standard Wetland Buffer Width requirements and the updated Standard Buffer Widths Consistent with Ecology Guidance.

Wetland Category	Current CAO Standard Buffer Widths (MICC 19.07.080)	Standard Buffer Widths Consistent with Ecology Guidance (Bunten et al., 2016, including July 2018 updates)*	
		With 3-5 habitat points	With 6-7 habitat points
Category I	100 ft	75 ft	110 ft
Category II	75 ft	75 ft	110 ft
Category III	50 ft	60 ft	110 ft
Category IV	35 ft	40 ft	

*All wetlands scoring 8-9 habitat points require a 225-foot standard buffer, regardless of Category; ESA anticipates there are very few, if any, wetlands in Mercer Island that would receive this habitat score.

Neighboring jurisdiction approaches

All neighboring jurisdictions have updated CAOs to reflect Ecology’s “Table XX.1” recommended buffer widths based on wetland category and habitat points. However, as mentioned above this table has since been revised and neighboring jurisdictions are now inconsistent with the guidance. Four out of five jurisdictions require a 40-foot buffer for Category IV wetlands while the City of Medina requires a 50-foot buffer.

Options for updates

ESA recommends updating standard wetland buffer widths to be consistent with Ecology’s Guidance as seen in Table 4.

Key Issue #3 for Wetlands – Prioritize buffer averaging with enhancement over buffer reductions with enhancement.

BAS consistency

The City’s current code does not prioritize buffer averaging over buffer reduction which is not consistent with BAS (Bunten et al., 2016). Buffer averaging results in the same amount of buffer area, while buffer reductions result in a net loss of area.

Neighboring jurisdiction approaches

Lake Forest Park and Kirkland allow for buffer averaging only. Edmonds allows for buffer reduction but prioritizes buffer averaging. Medina and Bainbridge Island do not prioritize either buffer averaging or reduction. However, Bainbridge Island requires that the modification that results in the retention of the greatest buffer area is used.

Options for updates

ESA recommends prioritizing buffer averaging with enhancement over buffer reduction with enhancement by either providing standards for buffer averaging only or stating that buffer averaging is preferred over buffer reduction.

Key Issue #4 for Wetlands – Update provisions for buffer reductions and buffer averaging

Standards for wetland buffer reduction with enhancement and for buffer averaging to be no greater than 25 percent of the standard buffer width, and include the list of mitigation measures from Ecology’s Table “XX.2”.

BAS consistency

The current code allows wetland buffers to be reduced (either through reduction with enhancement, or through averaging) by up to 50% for Category I, II, and III wetlands, and by 10 feet below the 35-foot standard width for Category IV wetlands. These reduction allowances are not consistent with BAS (Bunten et al., 2016), which states that “the width of the buffer at any given point after averaging should be no smaller than 75% of the standard buffer,” or a maximum reduction of 25%.

Neighboring jurisdiction approaches

All neighboring jurisdictions reviewed for this effort have updated their CAO to meet BAS and allow a maximum buffer reduction of 25% when buffer averaging is proposed. Lake Forest Park further set limits by wetland category, requiring that the narrowest point of the buffer is never less than 75 feet for Category I and II wetlands, 50 feet for Category III wetlands, and 25-feet for Category IV wetlands.

Bainbridge Island, Medina, and Edmonds have maintained limited allowances for buffer reduction with enhancement consistent with Ecology’s established BAS. Both Lake Forest Park and Kirkland do not allow buffer reduction and all buffer modifications must be met using buffer averaging.

Options for updates

- ESA recommends updating provisions for buffer reductions with enhancement or for buffer averaging to be no greater than 25 percent of the standard buffer width and include the list of mitigation measures from Ecology’s Table XX.2 (Bunten et al., 2016) to further protect wetlands. We suggest that buffer mitigation measures (e.g., enhancement plan and elements from Table XX.2) be required for consistency with BAS and to achieve “no net loss.”
- Buffer averaging with enhancement should be prioritized over buffer reductions with enhancement. Buffer averaging results in the same amount of buffer area, while buffer reductions result in a net loss of area.
- Monitoring for at least five years for any buffer enhancement should also be included in the code revisions and enforced. Monitoring plans should be required for any buffer reduction or buffer averaging proposal and included specific requirements including performance standards, annual reporting, and contingency plans.

Key Issue #4 for Wetlands – Update wetland mitigation requirements to reflect BAS

Wetland mitigation requirements are inconsistent with Ecology guidance, including mitigation sequencing (in order of preference).

BAS consistency

The current code is not consistent with BAS regarding mitigation and only states that alterations are allowed to lower functioning wetlands (Category III and IV) if the wetland is restored, enhanced, or replaced with a no net loss of wetland area or function. Current BAS suggest specific guidance and mitigation ratios that should be applied when critical areas and their buffers are modified. In order to make up for the spatial and temporal loss of functions, a successful mitigation project often requires the amount of mitigation to be larger than the impact being mitigated for. The mitigation ratios in Table 5 are recommended by current BAS (Bunten et al, 2016; Ecology, 2016a).

Table 5. Suggested Wetland Mitigation Ratios based on BAS (Bunten et al., 2016).

Category and Type of Wetland	Creation or Establishment	Rehabilitation	Enhancement
Category I: Bog, Natural Heritage Site	Not considered possible	Case by case	Case by case
Category I: Mature Forest	6:1	12:1	24:1

Category I: Based on Functions	4:1	8:1	16:1
Category II	3:1	6:1	12:1
Category III	2:1	4:1	8:1
Category IV	1.5:1	3:1	6:1

Neighboring jurisdiction approaches

All neighboring jurisdictions require the mitigation ratios I Table 6, as well as present requirements for mitigation sequencing and mitigation preference.

Options for updates

In addition to recommendations for mitigation sequencing for watercourses (Key Issue #3 for Watercourses), ESA recommends updating wetland mitigation requirements to reflect BAS regarding wetland mitigation guidance (e.g., compensatory mitigation technical guidance, watershed-based documents, and the Credit-Debit Method) and the mitigation preference sequence (federal- and state-approved mitigation banks, in lieu fee programs, then compensatory mitigation). We recommend the revised code include the suggested mitigation ratios suggested in Ecology guidance (Bunten et al., 2016) and summarized in Table 5. We also recommend the code clearly states that buffer mitigation should be performed at least at a 1:1 ratio.

Key Issue #5 for Wetlands – Current exemptions for Category III and IV wetlands

The current code provides exemptions for Category III and IV wetland that are not supported by BAS.

BAS consistency

The exemptions for Category III and IV wetland are not consistent with current BAS. The only exemptions for wetlands under current BAS (Bunten, et al., 2016) are the following:

- 1) Isolated, Category IV wetlands less than 4,000 square feet that:
 - Are not associated with riparian areas or their buffers,
 - Are not associated with shorelines of the state or their associated buffers.
 - Are not part of a wetland mosaic,
 - Do not score 5 or more points for habitat functions, and
 - Do not contain a WDFW priority habitat or species (PHS), do not contain federally listed species or critical habitat, or species of local importance.
- 2) Wetlands less than 1,000 square feet that meet the above criteria and do not contain federally listed species or their critical habitat.

Neighboring jurisdiction approaches

Three of the neighboring jurisdictions do not exempt wetlands from critical areas regulations under any circumstance and are more protective than BAS. Lake Forest Park and Kirkland allow exemptions to wetlands that meet the requirements listed above.

Options for updates

We recommend that current exemptions for Category III and IV under 2,500 square feet are removed during code revisions. ESA recommends revising exemptions to include language and requirements based on BAS. Alternatively, exemptions for wetland could be removed altogether. If the former is chosen by the City, we recommend a clear definition of “isolated wetland” be included in the code.

Conclusions and Summary of Code

Recommendations

Mercer Island is inconsistent with BAS in several key areas described above. In order to improve consistency with BAS, we recommend the City revise the required wetland rating system to the 2014 version, modify buffer width requirements to follow Ecology recommendations, include specific mitigation ratios to offset impacts to wetlands, and remove exemptions for alterations to Category III and IV wetland unless they meet the criteria suggested by Ecology.

FISH AND WILDLIFE HABITAT CONSERVATION AREAS

Fish and wildlife habitat conservation areas are specifically identified for protection as a critical area by the Growth Management Act (WAC 365-190-080[3]). The current CAO provides standards for protection of fish and wildlife habitat conservation areas in MICC Section 19.07.090. This section summarizes new scientific literature and regional policy concerning wildlife habitat protection and management, provides an assessment of current CAO provisions, and summarizes recommendations for updates to ensure consistency with BAS.

Updates to Scientific Literature

The latest documents in the record pertaining to fish and wildlife habitat conservation areas have been prepared predominantly by state, federal, and tribal agencies. In 2009, WDFW, published *Landscape Planning for Washington’s Wildlife: Managing for Biodiversity in Developing Areas*, which provides guidance for wildlife issues related to rural and urban residential development.

Fish and Wildlife Habitat Conservation Areas Model Code

The model code found in the *Critical Areas Assistance Handbook: Protecting Critical Areas Within the Framework of the Washington Growth Management Act* (CTED, 2007) is the most recent related to fish and wildlife habitat conservation areas; however, portions of *Wetlands Guidance for CAO Updates: Western Washington Version* (Bunten et al., 2016) are applicable or were referenced for code consistency.

Buffer Effectiveness

When discussing BAS for buffers and buffer effectiveness for fish and wildlife habitat conservation areas, one must distinguish between stream/riparian buffers (those areas providing functions related to fish habitat and stream processes) and habitat buffers (areas including riparian buffers and the terrestrial areas adjacent to them which provide wildlife functions for a variety of species).

Wildlife Habitat Connectivity

Research indicates that uplands surrounding wetlands and streams can serve as critical habitat for some species, a concept that expands the notion of a buffer beyond simply protecting wetland and riparian functions to protecting aquatic-dependent species (Hruby, 2013; Semlitsch and Jensen, 2001). Several literature sources have suggested that these terrestrial areas adjacent to wetlands and streams be termed “core habitat.” Studies on wetland-dependent species report that core habitat needs to extend between 1,000 feet to 0.6 mile from the wetland edge to be effective in supporting population survival; however,

there is little information on how much connectivity is needed between a critical area and core habitat (Hruby, 2013). Research indicates that stream/riparian buffers alone will not be enough to protect certain species and that a broader approach to protecting wildlife is needed, especially in areas that are intensely developed (Hruby, 2013; Semlitsch and Jensen, 2001).

Research related to general wildlife habitat connectivity, however, indicates that connectivity is important for species to travel and carry out life processes. Small mammals, amphibians, and reptiles are generally more sensitive to changes and gaps in connectivity compared to larger mammals and birds (WDFW, 2009). Areas with less than 50 percent undisturbed land cover (i.e., developed urban environments) need assistance to ensure that habitat connectivity is maintained (WDFW, 2009). In addition to using local critical areas inventory information and Priority Habitats and Species (PHS) data, WDFW recommends protecting large undeveloped habitat patches and open space areas as part of planning and building habitat corridors (WDFW, 2009). Habitat corridor widths greater than 1,000 feet generally provide the most benefit for the most species (WDFW, 2009).

Bald Eagle

Since the 2005 CAO revision, bald eagles were removed from the federal endangered species list in 2007, and from the state's list in 2017. Since then, many of the protective measures for this species have been eliminated. However, the USFWS still manages bald eagle under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The current BAS for bald eagle management is included in the *National Bald Eagle Management Guidelines* (USFWS, 2007). WDFW recommends that local governments comply with these federal guidelines if a proposed development has the potential to disturb eagles.

The National Bald Eagle Management Guidelines present specific guidance for minimizing impacts to nesting and foraging habitat for bald eagles.

Nesting Habitat: 1) establish a distance between the activity and the nest, 2) maintain preferably forested (or natural) areas between the activity and around nest trees, and 3) avoid certain activities during the breeding season. It is further recommended that a 660-foot buffer be established between a nest and construction activities if the activity will be visible from the nest. A 330-foot buffer is recommended if the activities will not be visible from the nest.

Foraging Habitat: 1) minimize potentially disruptive activities and development in the eagles' direct flight path between their nest and roost sites and important foraging areas, 2) locate long-term and permanent water-dependent facilities, such as boat ramps and marinas, away from important eagle foraging areas, 3) avoid recreational and commercial boating and fishing near critical eagle foraging areas during peak feeding times (usually early to mid-morning and late afternoon), except where eagles have demonstrated tolerance to such activity, 4) do not use explosives within ½ mile (or within 1 mile in open areas) of communal roosts when eagles are congregating, without prior coordination with the U.S. Fish and Wildlife Service and your state wildlife agency, and 5) locate aircraft corridors no closer than 1,000 feet vertical or horizontal distance from communal roost sites.

Though recovery has reduced the need for regulations, the taking of a bald eagle nest, still requires a federal permit. WDFW recommends that an applicant uses the [online permit recommendation tool](#) to determine if a permit is required for their specific activity. WDFW also recommends that local jurisdictions no longer require a written statement that “no permit is necessary” from USFWS.

Other Sources of Information

Other scientific sources have also generated relevant information, which we reviewed and have referenced in the gap analysis matrix and in the references section of this report.

Overview of Current Fish and Wildlife Habitat Conservation Areas Provisions

Key Issue #1 for FWHCAs – Unclear requirements for bald eagles

BAS consistency

The current code designates areas used by bald eagles for nesting, breeding, feeding, and survival as the only regulated habitat conservation areas located within the City. This designation seems somewhat more restrictive than just the nesting and foraging habitat that is the focus of the BAS for bald eagle management.

The City has developed an online mapping for [properties affected by bald eagles](#) (dated April 26, 2016) which show 330- and 660-foot buffers around nests known to occur within the City, in accordance with BAS. However, it is unclear what the source of the nest locations is and if they are still active. Furthermore, the map gives direction to contact WDFW and give firm documentation of a nest when observed. However, since the bald eagle has been removed from state listing, WDFW no longer takes individual reports of bald eagle sightings and/or nests, nor do they update their PHS maps with this information.

Neighboring jurisdiction approaches

All jurisdictions outside of Lake Forest Park include species of local importance under FWHCA regulations, but none of these jurisdictions provide what species have been designated as locally important. All jurisdictions require a habitat assessment if a modification to a FWHCA is proposed. However, none of the neighboring jurisdictions provide guidance for bald eagles outside of Bainbridge Island, which only requires compliance with the Bald and Golden Eagle Protection Act.

Options for updates

Similar to neighboring jurisdictions, ESA recommends the City consider regulating habitats under FWHCA regulations. A complete definition of what constitutes a FWHCA can be found in [WAC 365-190-130](#). To emphasize regulations on impacts to bald eagle, we recommend the City officially establish this species, and any other species seen necessary, as a species of local importance. All species or habitats that may be impacted by proposed actions would then need to go through an impact analysis, consideration of mitigation sequencing to avoid, minimize, and otherwise compensate for impacts, and critical areas reporting requirements.

Alternatively, if the City decides to keep bald eagle habitat as the only regulated habitat conservation area in the City, to be consistent with BAS, we recommend only nesting and foraging sites are regulated. We also recommend that the code be revised to include the requirements of the *National Bald Eagle Management Guidelines* (USFWS, 2007). A habitat impact analysis and critical areas reporting should also be required to demonstrate the minimization of adverse impacts.

CRITICAL AREAS INVENTORY MAPPING

Currently the data that exists for the City's critical areas are as follows:

- Watercourses and buffers (based on inventory performed in 2005); and
- Location of bald eagle nests (source unknown, 2016)

This data is available as data layers on the City’s [GIS Portal](#). The City also maintains detailed mapping of stormwater infrastructure. This dataset integrates natural flow pathways, such as streams, along with built conveyance features.

The City’s current breadth of potential critical areas mapped is largely lacking. No City-wide wetland inventory maps exist. ESA developed a GIS layer containing the eight wetlands inventoried in 2005 that could be used as a basis, though more information has likely become available since then. Establishing an inventory of known wetland areas integrating the King County wetland inventory, the existing GIS layer of 8 wetlands, and wetlands identified within development proposals could support the City with implementation of CAO standards.

The current watercourse mapping was performed in 2005 using a comprehensive drainage study performed by the City in 2004 that used GIS analysis and King County LiDAR imagery. Streams were designated as Type 1, Type 2, or Type 3 per the MICC. Inventories were completed using observations from the public rights of way and other public properties. Watercourses that could not be observed due to lack of property access were considered “not rated,” meaning that they could not be field verified. Per the report’s recommendation, all “not rated” watercourses were assumed to be a Type III watercourse for planning purposes but should be field verified when evaluating development proposals to ensure accuracy. In several instances where field verification has occurred, no stream has been observed. This has taken time and resources away from applicants and City staff.

An updated stream analysis implementing a combination of remote sensing, updated drainage infrastructure review, and site inspection approaches could be used to update existing watercourse mapping (and update associated typing).

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Attachments

Best Available Science Review and Gap Analysis Matrix

**City of Mercer Island
Critical Areas Ordinance (CAO) Update
Best Available Science Review and Gap Analysis Matrix, Planning Commission Review Draft – July 24, 2018**

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
Global CAO Revisions						
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input checked="" type="checkbox"/> Consistency of code sections		Consider standardizing subsection headings for each type of critical area, as much as feasible. Example: <ul style="list-style-type: none"> • Subsection A. Designation and Typing • Subsection B. General Review Requirements • Subsection C. Development Standards - Buffers • Subsection D. Development Standards – Additional Criteria for Specific Activities • Subsection E. Mitigation Requirements 	Internal consistency.		
19.07.010 Purpose.						
19.07.010 Purpose	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input checked="" type="checkbox"/> Consistency of code sections	Section could be better aligned with the policies and objectives in the Natural Environment Policies section of the City's Comprehensive Plan.	Revise section to be more consistent with language used in the Comprehensive Plan.	Internal consistency.		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not introduce the protection of buffers associated with critical areas; does not include statement that mitigation will be required for unavoidable impacts; and does not establish enforcement tools.	Revise section to include protection of buffers, mitigation requirements, and enforcement tools.	Commerce, 2018 (Chapters 1 and 3 - Structuring Critical Areas Regulations)		
19.07.020 General provisions.						
New subsection – mitigation sequencing	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	The current CAO does not state that mitigation sequencing is required for protection of all critical areas, including avoidance and minimization of impacts as initial actions. Provide statement and reference to "mitigation" definition.	Provide statement "All development proposals, uses, and activities subject to this chapter shall utilize mitigation sequencing"; include reference to "mitigation" definition. Review "mitigation" definition to ensure sequencing order and language is consistent with Ecology guidance.	Commerce 2018 (Chapter 1)		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
New subsection – notice on title	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	The current CAO does not require notice on title or other mechanism to provide record of identified critical areas on existing lots.	Add notice on title subsection. See Lake Forest Park code for useful language (also include language on disclosure at time of application that could be considered)	Commerce, 2018 (Chapter 1)		
19.07.030 Allowed alterations and reasonable use exception.						
19.07.030(A) Allowed Alterations – Generally	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Code does not include requirements for minimizing impacts to critical areas, and fully implementing mitigation sequencing.	Consider revising the introductory language to: “All allowed alteration activities <u>shall use reasonable methods to avoid, and if avoidance is not possible minimize impacts to critical areas and buffers to the greatest extent feasible.</u> All necessary temporary and permanent impacts to critical areas and buffers shall be mitigated consistent with mitigation sequencing. The following developments, activities, and associated uses shall be exempt from the requirements of this chapter, provided that they are otherwise consistent with the provisions of other local, state, and federal laws and requirements.”	Commerce, 2018 (Chapters 1 and 3)		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Code does not mention regulation on normal and routine repair, maintenance and operation of existing retention/detention facilities and other stormwater management facilities, irrigation and drainage ditches, and fish ponds.	Provide allowance for maintenance of existing stormwater facilities and conveyance. In some environments, existing drainage ditches may be completely manmade, or may be streams that were historically straightened and ditched, both of which may provide fish habitat. Also, in some environments, manmade wetlands or ponds may provide fish habitat. If included as an allowed alteration, make sure to state that the facility cannot be altered if it meets criteria for being considered a fish and wildlife habitat area.	WAC 365-190		
19.07.030(A)(6) Allowed Alterations – New Streets, Driveways, and Pedestrian Facilities 19.07.030(A)(7) – New utility facilities	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Current allowed alterations for new infrastructure facilities are in some cases inconsistent with BAS. For example, alteration allowance for new driveways likely too open-ended. That said, criteria requiring BMPs and mitigation such that no net loss is achieved, provide City with opportunity to review and further limit impacts and ensure mitigation.	Review subsections and consider moving some allowances from ‘Allowed Alterations’ to critical-areas specific sections. For new transportation and utility facilities, always require critical areas report submittal and mitigation plan.	Commerce, 2018 (Chapter 3)		
19.07.030(A)(8) Allowed	<input type="checkbox"/> Consistent w/ BAS	Removal of state-listed noxious weeds and invasive plant species	Consider adding section on invasive species removal to wetland section. Provide recommendations or resources	Bunten et al., 2016; Washington State		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
Alterations – Noxious Weeds	<input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	restricted to hand removal in wetlands.	for controlling state listed noxious weeds and invasive species. BAS provides suggestions for several strategies for controlling noxious weeds and invasive species.	Noxious Weed Control Board		
19.07.030(A)(10) Allowed Alterations – Existing single-family residences...	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Allowance limits scale and potential impacts associated with small expansions of existing single family residences. Allowance however does not specify this is a one-time allowance.	Provide additional criteria for allowance to specific as a one-time allowance, limiting potential for incremental increases in intensity of adjoining development.	Commerce, 2018 (Chapter 4)		
19.07.030(A)(13) Allowed Alterations - Wetlands	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	This section exempts small wetlands without requiring mitigation. BAS does not support exempting wetlands based on size or category alone without mitigation. Small wetlands may perform important functions. However, Ecology has developed a strategy for exempting small wetland when wetland functions are considered and mitigation is required.	Consider moving wetland related “Allowed Alterations” to wetland section. Limit exemption to hydrologically isolated Category III and IV wetlands less than 1,000 square feet in areas that are not associated with riparian areas or buffers, are not part of a wetland mosaic, and do not contain habitat for WDFW priority species.	Bunten et al., 2016; Granger et al., 2005		
19.07.040 Review and construction requirements.						
19.07.040.C - Setbacks	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	The current CAO does not require a building setback from the edge of required critical areas buffers. Building setbacks from buffer edges provide further separation of intensive construction activities and higher intensity uses from the retained native growth area. Building setbacks also allow for regular maintenance and repair of allowed improvements without reoccurring impacts to the outer buffer edge.	Update code to provide building setback from the outer edge of required critical areas buffers. Standard critical areas buffer building setback recommended to be 10 feet.	Commerce, 2018; WDFW, 2018 (Volume 2)		
19.07.050 Critical area study						

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
19.07.050 Critical area study	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Additional detail could be added to strengthen reporting requirements in this section.	Revise to include the following requirements: -A statement specifying the accuracy of the report and all assumptions made and relied upon; -A description of the methodologies used to conduct the critical areas study, including references; -A description of mitigation sequencing implementation, including steps to avoid and minimize critical areas impacts to the greatest extents feasible; -An assessment of the probable cumulative effects to critical areas resulting from the development of the site and the proposed development	Commerce, 2018 (Chapter 1); Bunten et al., 2016		
19.07.070 Watercourses						
19.07.070 Watercourses	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Watercourses are regulated as Fish and Wildlife Habitat Conservation Areas (FWHCA) for protection as a critical area by the Growth Management Act (WAC 365-190-080[3]).	Consider revising to maintain consistency with the GMA by combining Watercourses and Wildlife Habitat Conservation Areas sections, regulating watercourses and associated buffers as FWHCAs.	Commerce, 2018 (Chapters 1 and 2)		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section is not clear that watercourses within shoreline jurisdiction are regulated under the SMP.	Consider stating that development along Shorelines of the State is regulated under the SMP.	Consistency with SMP		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not reference a map or figure showing areas not regulated under the SMP.	Consider including a reference showing areas not regulated under the SMP.	Consistency with SMP		
19.07.070(A) Watercourses – Designation and Typing	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency	Section refers to the outdated numeric DNR Stream Typing System and classification is not completely consistent with State standards.	Revise watercourse classification system to include the Type S, F, Np, and Ns stream classes defined by DNR and moving Type S watercourse to SMP section. See Key Issue #1 for Watercourses for more detail.	The State stream typing system (WAC 222-16-030)		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
	<input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections					
19.07.070(B) Watercourse Buffers	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	BAS does not support the use of both reduction and averaging tools in conjunction.	Revise to explicitly state that buffer width may be averaged <u>or</u> reduced with an approved enhancement plan.	Granger et al., 2005		
19.07.070(B)(1) Watercourse Buffer Widths	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	The City's standard buffers range from 25 feet (piped/non-fish bearing streams) to 75 feet (fish-bearing streams). BAS suggests widths from 75 feet to well over 300 feet to protect a suite of ecological functions. Recent BAS suggests 100 foot minimum standard buffers for any stream with anadromous fish use and a 50-foot minimum standard buffer for other streams (Appendix L in Ecology, 2013).	Upper ranges (approaching and exceeding 150 feet) are not feasible given existing platting and development patterns on Mercer Island. Increase standard buffer widths for watercourses. Standard buffers to Type Np and Ns watercourses should be increased to 60 feet. Standard buffers for Type F watercourses providing salmonid habitat should be increased to 120 feet to be consistent with BAS for riparian buffers. Standard buffers for Type F watercourses providing non-salmonid fish habitat should be 80 feet. See Key Issue #2 for Watercourses for more detail.	Brennan et al., 2009; May, 2003; and Knutson and Naef, 1997		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Stream buffer width reductions should be no greater than 25 percent.	Require buffer mitigation measures (e.g., enhancement plan and elements from Table XX.2 – see table at end of this matrix) for consistency with BAS and to achieve “no net loss.”	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Current BAS does not provide regulatory recommendations for piped watercourses.	Buffer areas surrounding the alignment of piped watercourses provide little to no ecological function in their current condition; however, aquatic habitat science and regional restoration objectives prioritize watercourse daylighting and channel restoration efforts, even where resulting in sub-standard buffers due to existing constraints. Maintaining watercourse setbacks along the alignment of piped segments provides opportunity for future restoration, and may be structured to incentivize daylighting or other restoration as mitigation for adjacent development. If standard buffer (or setback) for piped watercourses is intended to incentivize development proposals to consider opportunity for daylighting (or other opportunities for onsite	Knight, 2009 (WDFW); Commerce, 2018 (incentives guidance provided in Chapters 4 and 6); WDFW, 2018 (Volume 2)		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
			or offsite mitigation), the rationale and criteria to achieve this intent should be added to section. See Key Issue #4 for Watercourses for more detail.			
19.07.070(B)(2)/(3) Reduction of Buffer Widths/Averaging of Buffer Widths	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Sections do not refer to mitigation sequencing requirements.	Revise to provide requirements on how to reduce impacts when an alteration to a watercourse is proposed: avoid, minimize, rectify, reduce, compensate, monitor (clear direction for implementation of mitigation sequencing). See Key Issue #3 for Watercourses for more detail.	Commerce, 2018; WAC 197-11-768		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Sections do not present all steps to mitigation.	Revise to clearly present all steps to mitigation, give a list of preferred mitigation location and types (i.e. on-site in-kind, off-site in-kind), and other associated requirements such as monitoring, maintenance, contingency plans, and bond requirements. These recommendations could be included in general requirements of the CAO or under specific critical area sections.	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not prioritize buffer averaging with enhancement over buffer reductions with enhancement. Buffer averaging results in the same amount of buffer area, while buffer reductions result in a net loss of area.	Revise to prioritize buffer averaging with enhancement over buffer reduction with enhancement by either providing standards for buffer averaging only or stating that buffer averaging is preferred over buffer reduction.	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Mitigation options that the Code Official may consider for buffer modifications appear to be limiting and likely not relevant to all applications.	Consider including additional options reviewed on a project-by-project basis which may provide a larger functional lift. Also, consider updating existing list based on recommendations from BAS (Knight, 2009) to be more comprehensive.	Knight, 2009 (WDFW)		
19.07.070(B)(4) Restoring Piped Watercourses	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Existing CAO states that City may deny request for stream daylighting where proposal would “result in buffers being adjusted and increased onto adjacent properties.” Current standard provides limited flexibility for beneficial restoration.	Section could be updated to provide limited buffer flexibility (beyond averaging and reduction with enhancement) intended to encourage daylighting while minimizing implications for existing lots and development. See BAS Report for additional details	Knight, 2009 (WDFW); WDFW, 2018 (Volume 2)		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
19.07.070(C) Impervious Surfaces	<input checked="" type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections		Revise to include as a standard / criteria within updated Development Standards section for watercourses.			
19.07.070(D) Development Standards	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Existing standard providing for relocation of intermittent / seasonal watercourses is inconsistent with BAS; does not account for temporary impacts. Existing culvert standards are generally consistent with BAS; however do not note State guidance.	Remove relocation allowance for intermittent / seasonal watercourses (Type Ns) and make consistent with criteria for Type F and Type Np watercourses. Update to provide reference to WDFW HPA requirements and stream crossing design guidelines.	Knight, 2009		
19.07.080 Wetlands						
19.07.080(A) Wetland Designation	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Additional detail could be added to strengthen reporting requirements specific to wetlands.	Revise section to include the following requirements: -Wetland rating forms and datasheets -Discussion of landscape setting	Commerce, 2018; Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section B does not specify how long a wetland delineation is valid.	Section B should be improved for consistency with BAS by specifying that wetland delineations are valid for five years.	Corps of Engineers Regulatory Guidance Letters RGL 05-02 and 08-02 set a five-year standard on wetland determinations.		
19.07.080(A)/(B) Wetland Designation/ Wetland Ratings	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not explicitly state wetlands should be delineated and rated by a qualified professional.	Revise to explicitly state wetlands should be delineated and rated by a qualified professional. Ensure definition of qualified professional with relation to wetland delineation and assessment is consistent with Ecology guidance.	Bunten et al., 2016		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
19.07.080(B) Wetland Ratings	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section B references outdated wetland rating manual.	Revise Section B to refer to the updated wetland scoring system using the Washington State Rating System for Western Washington: 2014 Update.	Compliance with federal and state requirements (WAC 365-190-090)		
Prohibited Activities	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section should list uses and activities that are regulated under the wetlands CAO.	Revise to include regulated uses including: removal, excavation, grading, or dredging of material; draining flooding or disturbing the wetland, water level or water table; construction, reconstruction, demolition, or expansion of any structure.	Bunten et al., 2016		
19.07.080(C)(1) Standard Wetland Buffer Widths	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Revise Section C(1) buffer widths and habitat scores refer to the previous wetland rating system scoring method. The rating system has been updated and scoring amounts have changed.	Revise Section C(1) to refer to the Washington State Rating System for Western Washington: 2014 Update and to reflect recent BAS updates to buffers; for example, as shown in Table XX.1 in Ecology’s guidance document (Bunten et al., 2012). Ecology’s example wetland buffer system contains provisions for increasing or decreasing buffer widths based on the number of habitat points received.	Hruby, 2014; Bunten et al., 2016		
19.07.080(C)(2)/(3) Reduction of Wetland Buffer Widths / Averaging of Wetland Buffer Widths	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section refers to “Reduction of <i>Watercourse</i> Buffer Widths” and “Averaging <i>Watercourse</i> Buffer Widths” mitigation options.	Add a new section specific to wetland mitigation, further detailing criteria and objectives of required enhancement necessary to average or reduce wetland buffers. Criteria should be specific to functions associated with adjacent wetland.	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <hr/> <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	BAS does not support the use of both reduction and averaging tools in conjunction.	Revise to explicitly state that buffer width may be averaged <u>or</u> if averaging is not feasible consistent with avoidance sequencing, reduced with an approved enhancement plan.	Granger et al., 2005		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS	Section does not refer to mitigation sequencing requirements.	Revise to provide requirements on how to reduce impacts when an alteration to a wetland is proposed: avoid, minimize, rectify, reduce, compensate, monitor.	Bunten et al., 2016		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
	<input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections					
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not prioritize buffer averaging with enhancement over buffer reductions with enhancement. Buffer averaging results in the same amount of buffer area, while buffer reductions result in a net loss of area.	Revise to prioritize buffer averaging with enhancement over buffer reduction with enhancement by either providing standards for buffer averaging only or stating that buffer averaging is preferred over buffer reduction.	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Code does not specify using wetland mitigation site protection mechanisms (e.g., conservation easement, restrictive covenant). BAS indicates that these will minimize functional loss from degradation of wetlands and buffers.	Include site protection mechanisms. If permanent fencing is included as a form of wetland protection, it should be designed so it doesn't interfere with wildlife migration and should be constructed in a way that minimizes impacts to the wetland buffer and associated habitat.	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not include impact minimization measures to further protect wetlands.	Include Ecology's Table XX.2 "Required measures to minimize impacts to wetlands" to achieve "no net loss".	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Minimum buffer modification restrictions are not consistent with BAS (Bunten et. al., 2016) which states that "the width of the buffer at any given point after averaging should be no smaller than 75% of the standard buffer," or a maximum reduction of 25%.	Update provisions for buffer reductions with enhancement and for buffer averaging with enhancement to be no greater than 25 percent of the standard buffer width.	Bunten et al., 2016		
19.07.080(D) Alterations	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use	Some alterations and or exceptions are specific to wetlands so it may be clearer to include them in this section, separately from 19.07.030.	Revise Section D to include alterations or exceptions specific to wetlands and their required buffers.	Bunten et al., 2016		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
	<input type="checkbox"/> Consistency of code sections					
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Current code provides exemptions for Category III and IV wetland that are not supported by BAS.	Remove exemptions for Category III and IV wetlands under 2,500 square feet. Alternatively, exemptions for wetland could be removed altogether. If the former is chosen by the City, we recommend a clear definition of "isolated wetland" be included in the code.	Bunten et al., 2016		
Wetland Mitigation Requirements	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section unclear about wetland mitigation requirements.	Include a section dedicated to wetland mitigation requirements.	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not include standards for amount of wetland mitigation.	Section should include mitigation ratios such as Table XX.1 in the sample ordinance in Bunten et al., 2016 and/or provide allowance for use of Ecology's Credit-Debit tool for establishing mitigation credit requirements. The code should clearly state that buffer mitigation should be performed at least at a 1:1 ratio.	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section is inconsistent with current federal mitigation preference. BAS indicates that mitigation banks and ILF programs have a significantly greater likelihood of mitigation success, as opposed to permittee-responsible mitigation	Specify that wetland mitigation using banks or ILF programs is preferred over permittee-responsible mitigation, if the wetland alteration falls within the service area of an existing bank or ILF program. (1. Wetland Mitigation Banks, 2. In-Lieu Fee Mitigation, 3. Permittee-responsible mitigation).	<i>Compensatory Mitigation for Losses of Aquatic Resources. Final Rule. (Federal Register 73(70): 19594-1970)</i>		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use	Lacks detail on the order of preference for compensatory mitigation.	Preference of Mitigation Actions. Compensatory wetland mitigation shall occur in the following order of preference: 1. Restoration a. Re-establishment b. Rehabilitation 2. Creation	Bunten et al., 2016		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
	<input type="checkbox"/> Consistency of code sections <input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections		3. Enhancement 4. Preservation			
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section lacks reference to BAS sources for compensatory mitigation.	Revise to include the following BAS references: <i>Wetland Mitigation in Washington State-Part 2: Developing Mitigation Plans-Version 1</i> (Ecology Publication #06-06-011b) and <i>Selecting Wetland Mitigation Sites Using a Watershed Approach, Western Washington</i> (Ecology Publication #09-06-32).	<i>Selecting Wetland Mitigation Sites Using a Watershed Approach, Western Washington</i> (Ecology Publication #09-06-32)		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not include provision for a contingency plan. Section does not specify the use of BAS in evaluating performance standards.	Consider adding a mitigation subsection requiring the development of a contingency plan. Consider adding a subsection to require the use of BAS.	Bunten et al., 2016		
	<input type="checkbox"/> Consistent w/ BAS <input checked="" type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Section does not include specific wetland mitigation monitoring requirements.	Add a subsection including monitoring requirements.	Bunten et al., 2016		
19.07.090 Wildlife Habitat Conservation Areas						
19.07.090 Wildlife Habitat Conservation Areas	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input checked="" type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use <input type="checkbox"/> Consistency of code sections	Watercourses are regulated as Fish and Wildlife Habitat Conservation Areas (FWHCA) for protection as a critical area by the Growth Management Act (WAC 365-190-080[3]).	Consider revising to maintain consistency with the GMA by combining Watercourses and Wildlife Habitat Conservation Areas sections.	Commerce, 2018		
	<input type="checkbox"/> Consistent w/ BAS <input type="checkbox"/> Inconsistent w/ BAS <input type="checkbox"/> Opportunity for improved BAS consistency <input checked="" type="checkbox"/> Clarity / Ease of use	Requirements for wildlife habitat conservation areas for bald eagle are unclear.	Consider regulating habitats under FWHCA regulations; see BAS Report for additional discussion.	Commerce, 2018		

Existing CAO Provision MICC Chapter / Section	Recommendation for Update	Reason For Lack of BAS Consistency	Suggested Change	Basis for Suggested Change	Direction from City	Code Update Tracking
	<input type="checkbox"/> Consistency of code sections					

Table XX.2 from Ecology Guidance for Wetlands (Bunten et al., 2016; modified buffer guidance from July 2018)

Table XX.2 Required measures to minimize impacts to wetlands
(All measures are required if applicable to a specific proposal)

Disturbance	Required Measures to Minimize Impacts
Lights	<ul style="list-style-type: none"> • Direct lights away from wetland
Noise	<ul style="list-style-type: none"> • Locate activity that generates noise away from wetland • If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source • For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10' heavily vegetated buffer strip immediately adjacent to the outer wetland buffer
Toxic runoff	<ul style="list-style-type: none"> • Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 ft of wetland • Apply integrated pest management
Stormwater runoff	<ul style="list-style-type: none"> • Retrofit stormwater detention and treatment for roads and existing adjacent development • Prevent channelized flow from lawns that directly enters the buffer • Use Low Intensity Development techniques (for more information refer to the drainage ordinance and manual)
Change in water regime	<ul style="list-style-type: none"> • Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	<ul style="list-style-type: none"> • Use privacy fencing OR plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion • Place wetland and its buffer in a separate tract or protect with a conservation easement
Dust	<ul style="list-style-type: none"> • Use best management practices to control dust