Frequently Asked Questions

What is best available science?

Best available science or BAS is the most current science relative to the functions and values of the critical areas, including the role of buffers in protecting wetland and stream functions and fish and wildlife. Under the GMA (RCW 36.70a.175), best available science must be used to designate and protect critical areas and to take measures to preserve and enhance anadromous fisheries, such as salmon (fish born in fresh water and spends most of its life in the salt water and return to fresh water to spawn).

What are wetlands and what is their importance?

“Wetland” means those areas that are inundated or saturated by groundwater or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include bogs, swamps, marshes, ponds, lakes and similar areas.

Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including but not limited to irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, landscape amenities or those wetlands created after July 1, 1990 that were unintentionally created as a result of the construction of a road, street or highway. However, those artificial wetlands intentionally created from non-wetland areas to mitigate conversion of wetlands as permitted by the City shall be considered wetlands.

Wetlands and their associated buffers are important in that they help maintain water quality; store and convey storm and flood water; recharge ground water; provide fish and wildlife habitat; and serve as areas for recreation, education, scientific study and aesthetic appreciation.

What are streams and what is their importance?

“Watercourse” means a course or route formed by nature or modified by man, generally consisting of a channel with a bed and banks or sides substantially throughout its length along which surface water flows naturally, including the Green/Duwamish River. The channel or bed need not contain water year-round. Watercourses do not include irrigation ditches, stormwater runoff channels or devices, or other entirely artificial watercourses unless they are used by salmonids or to convey or pass through stream flows naturally occurring prior to construction of such devices.

Streams and their associated buffers are important in that they provide important fish and wildlife habitat and travel corridors; help maintain water quality; store and convey storm and flood water; recharge groundwater; and serve as areas for recreation, education, scientific study and aesthetic appreciation.

What are geologically hazardous areas?

Geologically hazardous areas include areas susceptible to erosion, sliding, earthquake, or other geological events. They pose a threat to the health and safety of citizens, fish, and wildlife, when incompatible commercial, residential, or industrial development is sited in areas of significant hazard.

Some geological hazards can be reduced or mitigated by engineering, design, or modified construction practices so that risks to health and safety are acceptable. When engineering technology cannot reduce risks to acceptable levels, building in geologically hazardous areas is best avoided.

What are fish and wildlife conservation areas?

Fish and wildlife habitat conservation is the management of land for maintaining species in suitable habitats within their natural geographic distribution so that isolated subpopulations are not created.

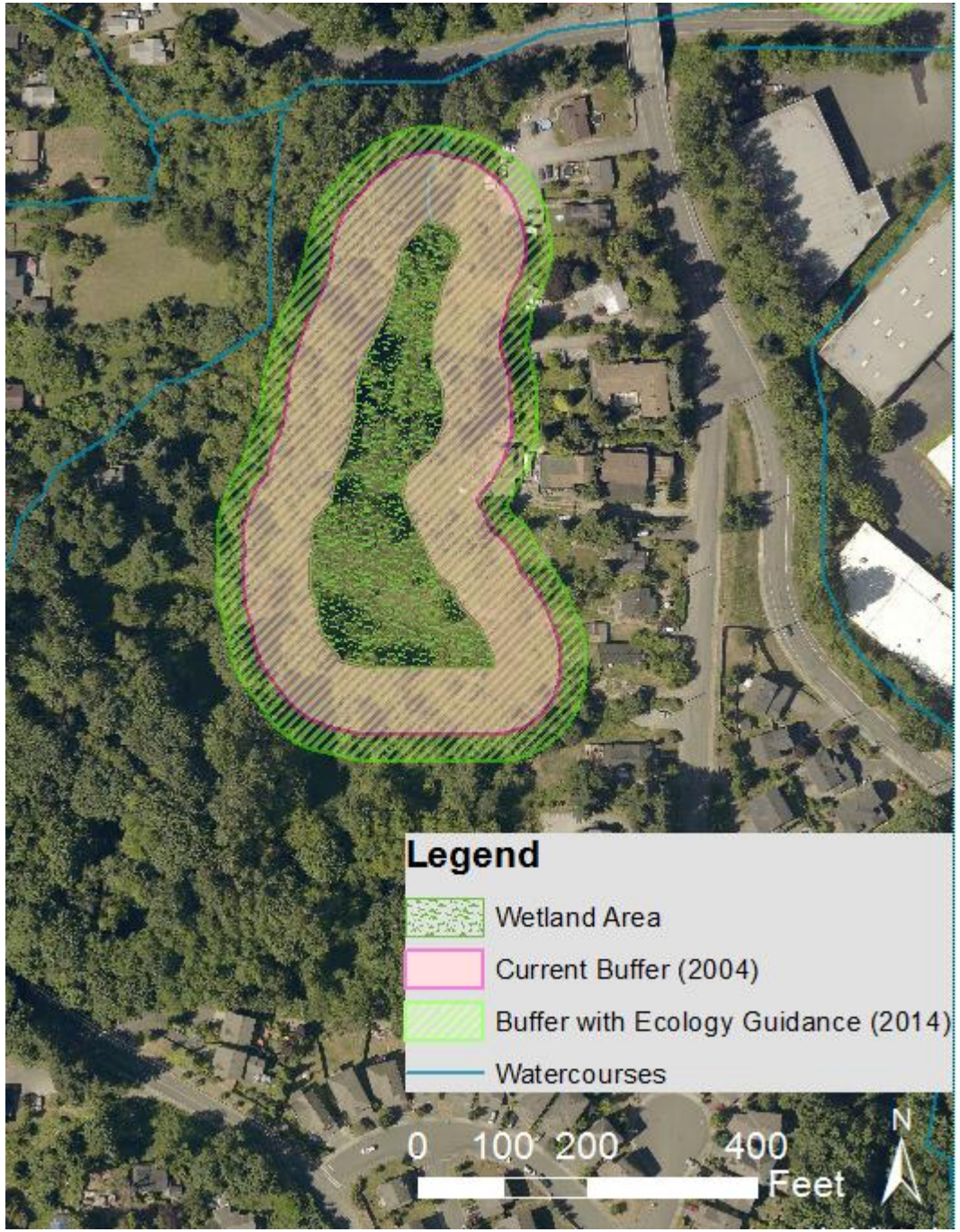
What are frequently flooded areas?

Floodplains and other areas subject to flooding perform important hydrologic functions and may present a risk to persons and property. Classifications of frequently flooded areas should include, at a minimum, the 100-year floodplain designations of the Federal Emergency Management Agency and the National Flood Insurance Program. Historic losses to salmon habitat have occurred as a result of development encroaching into floodplains. In addition to minimizing adverse effects to human health, safety and infrastructure, floodplains are ideal locations for salmon habitat restoration.

What is mitigation sequencing and compensatory mitigation?

If a project proponent is proposing to impact a critical area, the critical areas regulations should require them to show that they have first avoided and minimized impacts wherever practicable. Mitigation sequencing should be applied to show avoidance and minimization of impacts. The following are the steps in the mitigation sequence:

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.

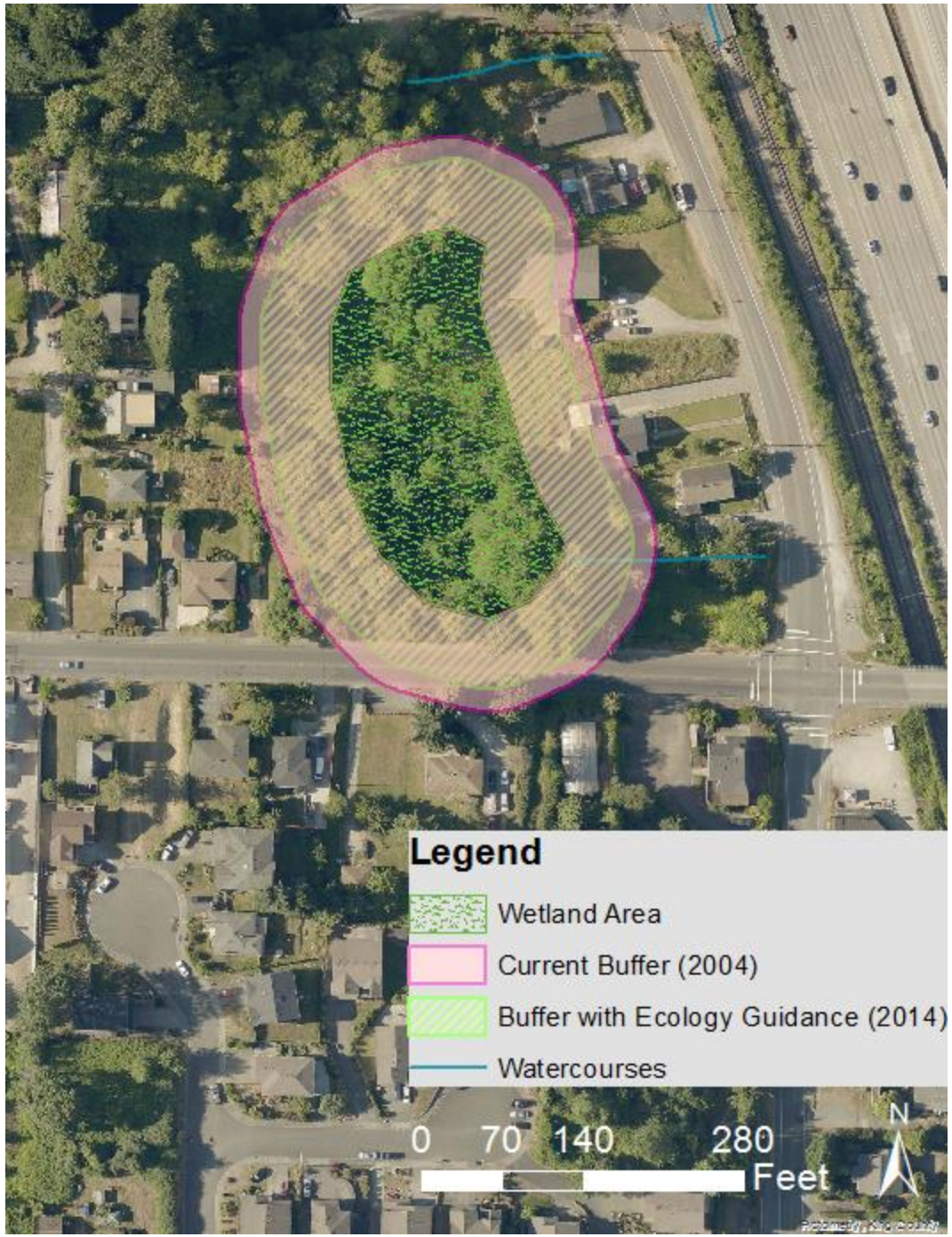


Wetland # 31

- Category III Wetland (2004)
  - Current buffer of 80 feet

- Category II Wetland (2014) with habitat score of 6 (moderate)
  - Buffer of 110 feet with minimization measures per Ecology guidance

ATTACHMENT B



Wetland # 37

- Category III Wetland (2004)
  - Current buffer of 80 feet

- Category III Wetland (2014) with habitat score of 5 (moderate)
  - Buffer of 60 feet with minimization measures per Ecology guidance

CHAPTER 18.45
ENVIRONMENTALLY SENSITIVE AREAS

Sections:

18.45.010 Purpose

A. The purpose of TMC Chapter 18.45 is to protect the environment, human life and property, designate and classify ecologically sensitive areas such as regulated wetlands and watercourses and geologically hazardous areas and to protect these areas and their functions while also allowing for reasonable use of public and private property. These regulations are prepared to comply with the Growth Management Act, RCW 36.70A, to apply best available science according to WAC 365-195-900 through 925 and to protect critical areas as defined by WAC 365-190-080.

B. Standards are hereby established to meet the following goals of protecting environmentally sensitive areas:

1. Minimize developmental impacts on the natural functions of these areas.

2. Protect quantity and quality of water resources.

3. Minimize turbidity and pollution of wetlands and fish-bearing waters and maintain wildlife habitat.

4. Prevent erosion and the loss of slope and soil stability caused by the removal of trees, shrubs, and root systems of vegetative cover.

5. Protect the public against avoidable losses, public emergency rescue and relief operations cost, and subsidy cost of public mitigation from landslide, subsidence, erosion and flooding.

6. Protect the community's aesthetic resources and distinctive features of natural lands and wooded hillsides.

7. Balance the private rights of individual property owners with the preservation of environmentally sensitive areas.

8. Prevent the loss of wetland and watercourse function and acreage, and strive for a gain over present conditions.

9. Give special consideration to conservation or protection measures necessary to protect or enhance anadromous fisheries.

10. Incorporate the use of best available science in the regulation and protection of sensitive areas as required by the State Growth Management Act, according to WAC 365-195-900 through 365-195-925 and WAC 365-190-080.

(Ord. 2301 §1 (part), 2010)

18.45.020 Best Available Science

A. Policies, regulations and decisions concerning sensitive areas shall rely on best available science to protect the functions of these areas and must give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fish and their habitats.

B. Nonscientific information may supplement scientific information, but is not an adequate substitution for valid and available scientific information.

C. Incomplete or unavailable scientific information leading to uncertainty for permitting sensitive area impacts may require application of effective adaptive management on a case by case basis. Adaptive management relies on scientific methods to evaluate how well regulatory or non-regulatory actions protect sensitive areas or replace their functions.

(Ord. 2301 §1 (part), 2010)

18.45.030 Sensitive Area Applicability, Maps, and Inventories

A. *APPLICABILITY* – The provisions of TMC Chapter 18.45 shall apply to all land uses and all development activities in a sensitive area or a sensitive area buffer as defined in the "Definitions" chapter of this title. The provisions of TMC Chapter 18.45 apply whether or not a permit or authorization is required within the City of Tukwila. No person, company, agency, or applicant shall alter a sensitive area or buffer except as consistent with the purposes and requirements of TMC Chapter 18.45. The following are sensitive areas regulated by TMC Chapter 18.45:

1. Abandoned coal mines;

2. Areas of potential geologic instability: Class 2, 3, 4 areas (as defined in the Definitions chapter of this title and TMC 18.45.120.A);

3. Wetlands;

4. Watercourses;

5. Fish and Wildlife Habitat Conservation Areas.

B. The Growth Management Act also identifies frequently flooded areas and areas of seismic instability as critical areas. Regulations governing frequently flooded areas are found in TMC

ATTACHMENT C

Chapter 16.52, Flood Zone Management. Areas of seismic instability are defined and regulated through the Washington State Building Code.

C. The City shall not approve any permit or otherwise issue any authorization to alter the condition of sensitive area land, water or vegetation or to construct or alter any structure or improvement in, over, or on a sensitive area or its buffer, without first ensuring compliance with the requirements of TMC Chapter 18.45.

D. Approval of a permit or development proposal pursuant to the provisions of TMC Chapter 18.45 does not release the applicant from any obligation to comply with the provisions of TMC Chapter 18.45.

E. When TMC Chapter 18.45 imposes greater restrictions or higher standards upon the development or use of land than other laws, ordinances or restrictive covenants, the provisions of TMC Chapter 18.45 shall prevail.

F. It is the obligation of the property owner to comply with all relevant provisions of this Code.

G. *SENSITIVE AREAS MAPS AND INVENTORIES*

1. The distribution of many sensitive areas in Tukwila is displayed on the Sensitive Areas Maps, on file with the Department of Community Development (DCD). These maps are based on site assessment of current conditions and review of the best available scientific data and are hereby adopted by reference.

2. Studies, preliminary inventories and ratings of potential sensitive areas are on file with the Department of Community Development.

3. As new environmental information related to sensitive areas becomes available, the Director is hereby designated to periodically add new information to the Sensitive Areas Maps. Removal of any information from the sensitive area maps is a Type 1 decision.

4. Regardless of whether a sensitive area is shown on the sensitive areas map, the actual presence or absence of the features defined in the code as sensitive areas shall govern. The Director may require the applicant to submit technical information to indicate whether sensitive areas actually exist on or adjacent to the applicant's site, based on the definitions of sensitive areas in this code.

5. All revisions, updates and reprinting of sensitive areas maps, inventories, ratings and buffers shall conform to TMC Chapter 18.45.

(Ord. 2301 §1 (part), 2010)

18.45.040 Sensitive Areas Special Studies

A. Application Required. An applicant for a development proposal that may include a sensitive area and/or its buffer shall submit those studies as required by the City and specified below to adequately identify and evaluate the sensitive area and its buffers.

1. A required sensitive area study shall be prepared by a person with experience and training in the scientific discipline appropriate for the relevant sensitive area in accordance with WAC 365-195-905(4). A qualified professional must have obtained a B.S. or B.A. or equivalent degree in ecology or related science, engineering, environmental studies, fisheries, geotechnical or related field, and two years of related work experience.

a. A qualified professional for Fish and Wildlife Habitat Conservation Areas must have a degree in ecology or related sciences and professional experience related to the subject species.

b. A qualified professional for wetland sensitive area studies must be a certified Professional Wetland Scientist or a non-certified Professional Wetland Scientist with at least two years of full-time work experience as a wetlands professional, including delineating wetlands using the state or federal manuals, preparing wetland reports, conducting functional assessments, and developing and implementing mitigation plans.

c. A qualified professional for a geological hazard study must be a professional geotechnical engineer as defined in the Definitions chapter of this title, licensed in the state of Washington.

d. A qualified professional for watercourses means a hydrologist, geologist, engineer or other scientist with experience in preparing watercourse assessments.

2. The sensitive area study shall use scientifically valid methods and studies in the analysis of sensitive area data and shall use field reconnaissance and reference the source of science used. The sensitive area study shall evaluate the proposal and all probable impacts to sensitive areas in accordance with the provisions of TMC Chapter 18.45.

B. Wetland and Watercourse Sensitive Area Studies. The sensitive area study shall contain the following information, as applicable:

1. The name and contact information of the applicant, a description of the proposal, and identification of the permit requested;

2. A copy of the site plan for the development proposal showing: sensitive areas and buffers and the development proposal with dimensions, clearing limits, proposed storm water management plan, and mitigation plan for impacts due to drainage alterations;

3. The dates, names and qualifications of the persons preparing the study and documentation of any fieldwork performed on the site;

4. Identification and characterization of all sensitive areas, water bodies, and buffers adjacent to the proposed project

area or potentially impacted by the proposed project as described in the following sections:

a. Characterization of wetlands must include:

(1) A wetland delineation report that includes methods used, field indicators evaluated and the results. Wetland delineation must be performed in accordance with approved federal wetland delineation manual and applicable regional supplements. Field data forms are to be included in the report. Data collection points are to be shown on the site plan with their corresponding numbers indicated. After the City of Tukwila confirms the boundaries, they are to be professionally surveyed to the nearest square foot and the site plan modified as necessary to incorporate the survey data. Exact wetland acreage will be calculated after the boundaries have been surveyed.

(2) Cowardin (Classification of Wetlands and Deepwater Habitats of the U.S. – U.S. Department of Interior) classification of the wetland(s).

(3) Hydrogeomorphic classification of the wetland(s).

(4) Hydroperiod.

(5) Brief landscape assessment of the wetland (identify hydrologic basin/sub-basin; inlets, outlets; surrounding land use; habitat quality and connectivity; ultimate point of discharge; presence of culverts or other constraints to flow; relationship to other wetlands/watercourses adjacent to or potentially impacted by the proposed project).

(6) Description of buffer size per this chapter, conditions (topographic considerations, existing vegetation types and density, habitat features, watercourse edges, presence of invasive species, etc.) and functions.

(7) Functional assessment. For proposed wetland filling or proposed projects that will impact buffers the Washington Wetland Classification System shall be used as a functional assessment.

(8) Classification of the wetland under Tukwila's rating system.

b. Characterization of the watercourses on site or adjacent to the site must include:

(1) Description of: flow regime, physical characteristics of streambed, banks, dimensions and bank-full width, stream gradient, stream and buffer vegetation conditions, habitat conditions, and existing modifications.

(2) Brief landscape assessment of the watercourse (identify hydrologic basin/sub-basin, and contributing basin area acreage, outlets, surrounding land use, habitat quality and connectivity, ultimate point of discharge, presence of culverts or other constraints to flow, presence of man-made or natural barriers to fish passage, relationship to wetlands or other watercourses adjacent to or potentially impacted by the proposed project, flow regime).

(3) Classification of the watercourse under Tukwila's rating system.

(4) Description of buffer size per this chapter, conditions (topographic considerations, existing vegetation types and density, habitat features, watercourse edges, presence of invasive species, etc.) and functions.

(5) Description of habitat conditions, wildlife/fish use of the watercourse, including sensitive, threatened or endangered species.

c. Citation of any literature or other resources utilized in preparation of the report.

5. A statement specifying the accuracy of the study and assumptions used in the study.

6. Determination of the degree of hazard and risk from the proposal both on the site and on adjacent properties.

7. An assessment of the probable cumulative impacts to sensitive areas, their buffers and other properties resulting from the proposal.

8. A description of reasonable efforts made to apply mitigation sequencing to avoid, minimize and mitigate impacts to sensitive areas.

9. Plans for adequate mitigation to offset any impacts.

10. Recommendations for maintenance, short-term and long-term monitoring, contingency plans and bonding measures.

11. Any technical information required by the Director to assist in determining compliance with TMC Chapter 18.45.

C. *GEOTECHNICAL REPORT* –

1. A geotechnical report appropriate both to the site conditions and the proposed development shall be required for development in Class 2, Class 3, Class 4 areas, and any areas identified as Coal Mine Hazard Areas unless waived pursuant to TMC Section 18.45.040 E.

2. Geotechnical reports for Class 2 areas shall include at a minimum a site evaluation review of available information regarding the site and a surface reconnaissance of the site and adjacent areas. Subsurface exploration of site conditions is at the discretion of the geotechnical consultant.

3. Geotechnical reports for Class 3, Class 4 and Coal Mine Hazard Areas shall include a site evaluation review of available information about the site, a surface reconnaissance of the site and adjacent areas, a feasibility analysis for the use of infiltration on-site and a subsurface exploration of soils and hydrology conditions. Detailed slope stability analysis shall be done if the geotechnical engineer recommends it in Class 3 or Coal Mine Hazard Areas, and must be done in Class 4 areas.

4. Applicants shall retain a geotechnical engineer to prepare the reports and evaluations required in this subsection. The geotechnical report and completed site evaluation checklist shall be prepared in accordance with the generally accepted geotechnical practices, under the supervision of and signed and stamped by the geotechnical engineer. The report shall be prepared in consultation with the Community Development and Public Works Departments.

5. The opinions and recommendations contained in the report shall be supported by field observations and, where appropriate or applicable, by literature review conducted by the geotechnical engineer which shall include appropriate explorations, such as borings or test pits, and an analysis of soil

characteristics conducted by or under the supervision of the engineer in accordance with standards of the American Society of Testing and Materials or other applicable standards. If the evaluation involves geologic evaluations or interpretations, the report shall be reviewed and approved by a geotechnical engineer.

D. *SENSITIVE AREA STUDY - MODIFICATIONS TO REQUIREMENTS* –

1. The Director may limit the required geographic area of the sensitive area study as appropriate if:

a. The applicant, with assistance from the City, cannot obtain permission to access properties adjacent to the project area; or

b. The proposed activity will affect only a limited part of the site.

2. The Director may allow modifications to the required contents of the study where, in the judgment of a qualified professional, more or less information is required to adequately address the potential sensitive area impacts and required mitigation.

E. *WAIVER* – A waiver to the sensitive area study may be granted by the Director if the following conditions have been met:

1. A wetland has been classified and delineated, or the Ordinary High Water Mark (OHWM) has been determined in watercourses and confirmed by the City within the last two years, in accordance with the requirements of this chapter.

2. The classification and location of wetland boundaries or OHWM have been confirmed by the City, and the proposed development or action will avoid all impacts to the sensitive area(s).

3. There is substantial evidence there will be no detrimental impact to the sensitive areas or buffers, and that the goals, purposes, objectives and requirements of TMC Chapter 18.45 will be followed.

F. *REVIEW OF STUDIES* – The Department of Community Development will review the information submitted in the sensitive area study to verify the information, confirm the nature and type of the sensitive area, and ensure the study is consistent with TMC Chapter 18.45. At the discretion of the Director, sensitive area studies may undergo peer review, at the expense of the applicant.

(Ord. 2368 § 47, 2012; Ord. 2301 §1 (part), 2010)

18.45.050 Interpretation

The provisions of TMC Chapter 18.45 shall be held to be minimum requirements in their interpretation and application and shall be liberally construed to serve the purposes of TMC Chapter 18.45.

(Ord. 2301 §1 (part), 2010)

18.45.060 Procedures

When an applicant submits an application for any building permit, subdivision, short subdivision or any other land use review which approves a use, development or future construction, the location and dimensions of all sensitive areas and buffers on the site shall be indicated on the plans submitted. When a sensitive area is identified, the following procedures apply. The Director may waive item numbers 1, 2, 4 and 5 of the following if the size and complexity of the project does not warrant that step in the procedures and the Director grants a waiver pursuant to TMC Section 18.45.040 E. Approval by the Department of a sensitive area alteration is contingent upon the applicant granting the City the right of continuous entry upon proper notice to observe sensitive area conditions.

1. *Sensitive areas study and geotechnical report:*

a. The applicant shall submit the relevant study as required in TMC Section 21.04.140 and TMC Chapter 18.45

b. It is intended that sensitive areas studies and information be utilized by applicants in preparation of their proposals and therefore shall be undertaken early in the design stages of a project.

2. Planned residential development permit: Any new residential subdivision or multiple family residential proposal that includes a wetland or watercourse or its buffer on the site may apply for a planned residential development permit and meet the requirements of the Planned Residential Development District chapter of this title.

3. Denial of use or development: A use or development will be denied if the Director determines the applicant cannot ensure that potential dangers and costs to future inhabitants of the development, adjacent properties, and Tukwila are minimized and mitigated to an acceptable level.

4. Preconstruction meeting: The applicant, specialist(s) of record, contractor, and department representatives will be required to attend pre-construction meetings prior to any work on the site.

5. Construction monitoring: The specialist(s) of record shall be retained to monitor the site during construction.

6. On-site identification: The Director may require the boundary between a sensitive area and its buffer and any development or use to be permanently identified with fencing, and/or with a wood, plastic or metal sign mounted on a treated wood, concrete or metal post. Sign size will be determined at the time of permitting; however, the minimum size shall be 10 x 12 inches. It shall be permanently affixed to the post by bolts and the wording shall be as follows:

"Protection of this natural area is in your care. Alteration, dumping or disturbance is prohibited pursuant to TMC Chapter 18.45. Please call the City of Tukwila at 206-431-3670 for more information."

(Ord. 2301 §1 (part), 2010)

18.45.070 Sensitive Area Permitted Uses

A. General Uses. The uses set forth in this entire section, including subsections A. through D, and the following general uses, may be located within a sensitive area or buffer, subject to the provisions of TMC Chapter 21.04 and of the mitigation requirements of TMC Chapter 18.45:

1. Maintenance and repair of existing uses and facilities provided no alteration or additional fill materials will be placed or heavy construction equipment used in the sensitive area or buffer.

2. Nondestructive education and research.

3. Passive recreation and open space.

4. Maintenance and repair of essential streets, roads, rights-of-way, or utilities.

5. Actions to remedy the effects of emergencies that threaten the public health, safety or welfare.

6. Maintenance activities of existing landscaping and gardens in a sensitive area buffer including, but not limited, to mowing lawns, weeding, harvesting and replanting of garden crops and pruning and planting of vegetation. The removal of established native trees and shrubs is not permitted.

B. PERMITTED USES SUBJECT TO ADMINISTRATIVE REVIEW. The following uses may be permitted only after administrative review and approval by the Director:

1. Maintenance and repair of existing uses and facilities where alteration or additional fill materials will be placed or heavy construction equipment used.

2. New surface water discharges to sensitive areas or their buffers from detention facilities, pre-settlement ponds or other surface water management structures may be allowed provided that the discharge meets the clean water standards of RCW 90.48 and WAC 173.200 and 173.201 as amended, and does not adversely affect water level fluctuations in the wetland or adversely affect watercourse habitat and watercourse flow conditions relative to the existing rate. Water quality monitoring may be required as a condition of use.

3. Bioswales and dispersion outfalls are the only storm water facilities allowed in wetland or watercourse buffers. Water quality monitoring may be required as a condition of use

4. Enhancement or other mitigation including landscaping with native plants..

5. Essential Utilities.

a. Essential utilities must be constructed to minimize, or where possible avoid, disturbance of the sensitive area and its buffer.

b. All construction must be designed to protect the sensitive area and its buffer against erosion, uncontrolled storm water, restriction of groundwater movement, slides, pollution, habitat disturbance, any loss of flood carrying capacity and storage capacity, and excavation or fill detrimental to the environment.

c. Upon completion of installation of essential utilities, sensitive areas and their buffers must be restored to pre-project configuration, replanted as required and provided with maintenance care until newly planted vegetation is established. In addition, mitigation to offset impacts to sensitive areas or their buffers must be carried out in accordance with the standards and mitigation ratios of this chapter.

d. All crossings must be designed for shared facilities in order to minimize adverse impacts and reduce the number of crossings.

6. Essential Public Streets, Roads and Rights-of-Way

a. For construction of new essential public streets, roads and rights-of-way, as defined by TMC Section 18.06.285, where avoidance of sensitive areas is not possible, impacts to the sensitive area and its buffer must be kept to the absolute minimum.

b. Essential public streets, roads and rights-of-way, as defined by TMC Section 18.06.285, must be designed and maintained to prevent erosion and avoid restricting the natural movement of groundwater.

c. Essential public streets, roads and rights-of-way, as defined by TMC Section 18.06.285, must be located to conform to the topography so that minimum alteration of natural conditions is necessary. The number of crossings shall be limited to those necessary to provide essential access.

d. Essential public streets, roads and rights-of-way, as defined by TMC Section 18.06.285, must be constructed in a way that does not adversely affect the hydrologic quality of the wetland or watercourse and/or its buffer. Where feasible, crossings must allow for combination with other essential utilities.

e. Upon completion of construction, the area affected must be restored to an appropriate grade, replanted according to a plan approved by the Director, and provided with care until newly planted vegetation is established. In addition, mitigation to offset impacts to sensitive areas or their buffers must be carried out in accordance with the standards and mitigation ratios set forth in this chapter.

7. Public/Private Use and Access

a. Public and private access shall be limited to trails, boardwalks, covered or uncovered viewing and seating areas, footbridges only if necessary for access to other areas of the property, and displays (such as interpretive signage or kiosks), and must be located in areas that have the lowest sensitivity to human disturbance or alteration. Access features shall be the minimum dimensions necessary to avoid adverse impacts to the sensitive area. Trails shall be no wider than 5 feet and are only allowed in the outer half of the buffer, except for allowed wetland or stream crossings. For proposed wetland or watercourse crossings or trails, an assessment of impacts to wetland/watercourse and buffer function (especially where the sensitive area provides habitat function for wildlife) will be required and must be prepared by a qualified biologist, except for minor crossings, such as foot bridges or stepping stones, for access to contiguous property. Crossings and trails must be designed to avoid adverse impacts to sensitive area functions. The Director may require mechanisms to limit or control public access when environmental conditions warrant (such as temporary trail closures during wildlife breeding season or migration season).

b. Public access must be specifically developed for interpretive, educational or research purposes by, or in cooperation with, the City or as part of the adopted Tukwila Parks and Open Space Plan. Private footbridges are allowed only for access across a sensitive area that bisects the property.

c. No motorized vehicle is allowed within a sensitive area or its buffer except as required for necessary maintenance, agricultural management or security.

d. Any public access or interpretive displays developed along a sensitive area and its buffer must, to the extent possible, be connected with a park, recreation or open-space area.

e. Vegetative edges, structural barriers, signs or other measures must be provided wherever necessary to protect sensitive areas and their buffers by limiting access to designated public use or interpretive areas.

f. Access trails and footbridges must incorporate design features and materials that protect water quality and allow adequate surface water and groundwater movement. Trails must be built of permeable materials.

g. Access trails and footbridges must be located where they do not disturb nesting, breeding and rearing areas and must be designed so that sensitive plant and critical wildlife species are protected. Trails and footbridges must be placed so as to not cause erosion or sedimentation, destabilization of watercourse banks, interference with fish passage or significant removal of native vegetation. Footbridges must be anchored to prevent their movement due to water level or flow fluctuations. Any work in the wetland or stream below the OHWM will require additional federal and state permits.

8. Dredging, Digging or Filling.

a. Dredging, digging or filling within a sensitive area or its buffer may occur only with the permission of the Director and only for the following purposes:

(1) Uses permitted by TMC Sections 18.45.080, 18.45.090, 18.45.110, 18.45.130;

(2) Maintenance of an existing watercourse;

(3) Enhancement or restoration of habitat in conformance with an approved mitigation plan identified in a sensitive area study;

(4) Natural system interpretation, education or research when undertaken by, or in cooperation with, the City;

(5) Flood control or water quality enhancement by the City;

(6) Maintenance of existing water quality controls, for normal maintenance needs and for any diversion, rerouting, piping or other alteration permitted by TMC Chapter 18.45;

(7) Filling of abandoned mines.

b. Any dredging, digging or filling shall be performed in a manner that will minimize sedimentation in the water. Every effort will be made to perform such work at the time of year when the impact can be lessened.

c. Upon completion of construction, the area affected must be restored to an appropriate grade, replanted according to a plan approved by the Director, and provided with care until newly planted vegetation is established.

9. Removal of Hazardous Trees. Only hazardous trees, as defined in Chapter 18.06.395, may be removed from a sensitive area. In cases where the hazard is not obvious, an assessment by an arborist certified by the International Society of Arborists may be required by the Director. Tree replacement in accordance with TMC Chapter 18.54 is required for any hazardous tree removed from a sensitive area. Dead trees may not be removed, unless they present a hazard to public safety or structures.

C. Permitted Uses Subject to Exception Approval. Other uses may be permitted upon receiving a reasonable use exception pursuant to TMC Section 18.45.180. A use permitted through a reasonable use exception shall conform to the procedures of TMC Chapter 18.45 and be consistent with the underlying zoning.

D. Uses allowed under a Sensitive Area Master Plan prepared and approved under the provisions of TMC Section 18.45.160.

(Ord. 2301 §1 (part), 2010)

18.45.080 Wetlands Designations, Ratings and Buffers

A. *WETLAND DESIGNATIONS*.

1. For the purposes of TMC Chapter 18.45, "wetlands" are defined in the Definitions chapter of this title. A wetland boundary is the line delineating the outer edge of a wetland established by using the approved federal wetland delineation manual and applicable regional supplements.

2. Wetland determinations and delineation of wetland boundaries shall be made by a qualified professional, as described in TMC Section 18.45.040.

3. Wetland areas within the City of Tukwila have certain characteristics and functions and have been influenced by urbanization and related disturbances. Wetland functions include, but are not limited to, the following:

a. Improving water quality;

b. Maintaining hydrologic functions (reducing peak flows, decreasing erosion, groundwater recharge, flood storage); and

c. Providing habitat for plants, mammals, fish, birds, and amphibians.

B. *WETLAND RATINGS* –

Wetlands shall be designated in accordance with the Washington State Wetlands Rating System for Western Washington, (Washington State Department of Ecology, August 2004, Publication #04-06-025) as Category I, II, III, or IV as listed below:

1. Category I wetlands are those that: i) represent a unique or rare wetland type; or ii) are more sensitive to disturbance than most wetlands; or iii) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or iv) provide a high level of functions. The following types

of wetlands listed by Washington Department of Ecology and potentially found in Tukwila are Category I:

a. Estuarine wetlands (deepwater tidal habitats with a range of fresh-brackish-marine water chemistry and daily tidal cycles, salt and brackish marshes, intertidal mudflats, bays, sounds, and coastal rivers);

b. Wetlands that perform many functions well and score at least 70 points in the Western Washington Wetlands Rating System.

2. Category II wetlands are difficult, though not impossible, to replace and provide high levels of some functions. These wetlands occur more commonly than Category I wetlands, but still need a relatively high level of protection. The following types of wetlands listed by Washington Department of Ecology and potentially found in Tukwila are Category II wetlands:

a. The wetland is documented as regionally significant waterfowl or shorebird areas by the State Department of Fish and Wildlife.

b. Wetlands that perform functions well. Wetlands scoring between 51-69 points (out of 100) on the questions related to the functions present.

3. Category III wetlands have a moderate level of functions (scores between 30 and 50 points). Wetlands scoring between 30-50 points generally have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.

4. Category IV wetlands have the lowest levels of functions (scores less than 30 points) and are often heavily disturbed. While these are wetlands that should be able to be replaced or improved, they still need protection because they may provide some important functions. Any disturbance of these wetlands will be considered on a case by case basis.

C. *WETLAND BUFFERS* – A buffer area shall be established adjacent to designated wetland areas. The purpose of the buffer area shall be to protect the integrity and functions of the wetland area. Any land alteration must be located out of the buffer areas as required by this section. Wetland buffers are intended in general to:

1. Minimize long-term impacts of development on properties containing wetlands;

2. Protect wetlands from adverse impacts during development;

3. Preserve the edge of the wetland and its buffer for its critical habitat value;

4. Provide an area to stabilize banks, to absorb overflow during high water events and to allow for slight variation of aquatic system boundaries over time due to hydrologic or climatic effects;

5. Reduce erosion and increased surface water runoff;

6. Reduce loss of or damage to property;

7. Intercept fine sediments from surface water runoff and serve to minimize water quality impacts; and

8. Protect the sensitive area from human and domestic animal disturbances.

An undisturbed sensitive area or buffer may substitute for the yard setback and landscape requirements of the TMC Chapter 18.50 and 18.52.

D. *WETLAND BUFFER WIDTHS* – The following standard buffers shall be established from the wetland edge:

1. Category I and II Wetland: 100-foot buffer.

2. Category III Wetland: 80-foot buffer.

3. Category IV Wetland: 50-foot buffer.

E. *BUFFER SETBACKS* –

1. All commercial and industrial buildings shall be set back 15 feet and all other development shall be set back 10 feet from the buffer's edge. The building setbacks shall be measured from the foundation to the buffer's edge. Building plans shall also identify a 20-foot area beyond the buffer setback within which the impacts of development will be reviewed.

2. The Director may waive setback requirements when a site plan demonstrates there will be no impacts to the buffer from construction or occasional maintenance activities (see TMC Figure 18-2).

F. *VARIATION OF STANDARD WETLAND BUFFER WIDTH* –

1. The Director may reduce the standard wetland buffers only where the buffer conditions are currently degraded (due to existing development within the prescribed buffer width, the presence of significant amount of invasive vegetation that impairs buffer function, and/or lack of native vegetation) on a case-by-case basis, provided the remaining buffer is enhanced and the buffer does not contain slopes 15% or greater. Where a buffer has a variable topography that includes Class I slopes on the landward half of the buffer, a buffer reduction may be allowed if the proposed reduction is in the area with the Class I slopes, and a 10-foot planted setback from the top of the slope is maintained. Further, a geotechnical review of the proposed buffer enhancement plan must determine the buffer enhancement can be implemented without destabilizing the slope. The approved buffer width shall not result in greater than a 50% reduction in width.

2. Buffer reduction with enhancement may be allowed by the Director as a Type 2 permit with an approved buffer enhancement plan prepared by a qualified wetland biologist, if:

a. Additional protection to wetlands will be provided through the implementation of a buffer enhancement plan;

b. The existing condition of the buffer is degraded; and

c. Buffer enhancement includes, but is not limited to the following:

(1) Planting vegetation that would increase value for fish and wildlife habitat or improve water quality or hydrology;

(2) Enhancement of wildlife habitat by incorporating structures that are likely to be used by wildlife, including wood duck boxes, bat boxes, snags, root wads/stumps, birdhouses and heron nesting areas; or

(3) Removing non-native plant species and noxious weeds from the buffer area and replanting the area subject to 2.c. (1) above.

3. Buffers for all types of wetlands will be increased when they are determined to be particularly sensitive to disturbance or the proposed development will create unusually adverse impacts. Any increase in the width of the buffer shall be required only after completion of a wetland study by a qualified wetlands specialist or expert that documents the basis for such increased width. An increase in buffer width may be appropriate when:

a. The development proposal has the demonstrated potential for significant adverse impacts upon the wetland that can be mitigated by an increased buffer width; or;

b. The area serves as a habitat for endangered, threatened, sensitive or monitor species listed by the federal government or the State.

4. Every reasonable effort shall be made to maintain the existing viable native plant life in the buffers. Vegetation may be removed from the buffer as part of an enhancement plan approved by the Director. Enhancements will ensure that slope stability and wetland quality will be maintained or improved. Any disturbance of the buffers for wetlands shall be replanted with a diverse plant community of native northwest species that are appropriate for the specific site as determined by the Director. If the vegetation must be removed, or because of the alterations of the landscape the vegetation becomes damaged or dies, then the applicant for a permit must replace existing vegetation along wetlands with comparable specimens, approved by the Director, which will restore buffer functions within five years.

5. The Director shall require subsequent corrective actions and long-term monitoring of the project if adverse impacts to regulated wetlands or their buffers are identified.

(Ord. 2368 §48, 2012; Ord. 2301 §1 (part), 2010)

18.45.090 Wetlands Uses, Alterations and Mitigation

A. No use or development may occur in a Category I, Category II, Category III or Category IV wetland or its buffer except as specifically allowed by TMC Chapter 18.45. Any use or development allowed is subject to review and approval by the Director. Where required, a mitigation plan must be developed and must comply with the standards of mitigation required in TMC Chapter 18.45. In addition, federal and/or state authorization is required for direct impacts to waters of the United States or the State of Washington.

B. *ALTERATIONS* –

1. Alterations to wetlands are discouraged and are limited to the minimum necessary for project feasibility. Requests for alterations must be accompanied by a mitigation plan, are subject to Director approval, and may be approved only if the following findings are made:

a. The alteration will not adversely affect water quality;

b. The alteration will not adversely affect fish, wildlife, or their habitat;

c. The alteration will not have an adverse effect on drainage and/or storm water detention capabilities;

d. The alteration will not lead to unstable earth conditions or create an erosion hazard or contribute to scouring actions;

e. The alteration will not be materially detrimental to any other property; and

f. The alteration will not have adverse effects on any other sensitive areas.

2. Alterations are not permitted to Category I and II wetlands unless specifically exempted under the provisions of TMC Chapter 18.45.

3. Alterations to Category III wetlands are allowed only where unavoidable and adequate mitigation is carried out in accordance with the standards of this section.

4. Alterations to Category IV wetlands are allowed, only where unavoidable and adequate mitigation is carried out in accordance with the standards of TMC Section 18.45.090.

5. Wetlands that are less than 1,000 square feet may be exempted where it has been shown by the applicant that they are not associated with a riparian corridor, they are not part of a wetland mosaic, do not contain habitat identified as essential for local populations of priority species identified by the Washington State Department of Fish and Wildlife and do not score 20 points or greater for habitat in the Western Washington Wetland Rating System.

6. Mitigation plans shall be completed for any proposals for dredging, filling, alterations and relocation of wetland habitat allowed in TMC Chapter 18.45.

C. *MITIGATION SEQUENCING* – Applicants shall demonstrate that reasonable efforts have been examined with the intent to avoid and minimize impacts to wetlands and wetland buffers. When an alteration to a wetland or its required buffer is proposed, such alteration shall be avoided, minimized or compensated for in the following order of preference:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;

2. Minimizing wetland and wetland buffer 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.

D. WETLAND MITIGATION PLAN CONTENT.

1. The mitigation plan shall be developed as part of a sensitive area study by a specialist approved by the Director. Wetland and/or buffer alteration or relocation may be allowed only when a mitigation plan clearly demonstrates that the changes would be an improvement of wetland and buffer quantitative and qualitative functions. The plan shall follow the performance standards of TMC Chapter 18.45 and show how water quality, wildlife and fish habitat, and general wetland quality would be improved.

2. The scope and content of a mitigation plan shall be decided on a case-by-case basis taking into account the degree of impact and the extent of the mitigation measures needed. As the impacts to the sensitive area increase, the mitigation measures to offset these impacts will increase in number and complexity.

3. For wetlands, the format of the mitigation plan should follow that established in Wetland Mitigation in Washington State, Part 2 – Developing Mitigation Plans (Washington Department of Ecology, Corps of Engineers, EPA, March 2006 or as amended).

4. The components of a complete mitigation plan are as follows:

a. Baseline information of quantitative data collection or a review and synthesis of existing data for both the project impact zone and the proposed mitigation site.

b. Environmental goals and objectives that describe the purposes of the mitigation measures. This should include a description of site selection criteria, identification of target evaluation species and resource functions.

c. Performance standards of the specific criteria for fulfilling environmental goals and for beginning remedial action or contingency measures. They may include water quality standards, species richness and diversity targets, habitat diversity indices, or other ecological, geological or hydrological criteria.

d. A detailed construction plan of the written specifications and descriptions of mitigation techniques. This plan should include the proposed construction sequence and construction management, and be accompanied by detailed site diagrams and blueprints that are an integral requirement of any development proposal.

e. A monitoring and/or evaluation program that outlines the approach for assessing a completed project for the specified monitoring period. An outline shall be included that spells out how the monitoring data will be evaluated by agencies that are tracking the mitigation project's progress.

f. Contingency plan identifying potential courses of action and any corrective measures to be taken when monitoring or evaluation indicates project performance standards have not been met.

g. Performance security or other assurance devices as described in TMC Section 18.45.210.

E. *MITIGATION STANDARDS*.

1. Types of Wetland Mitigation:

a. Mitigation for wetlands shall follow the mitigation sequencing steps in this chapter and may include the following types of actions:

(1) Restoration:

a) Re-establishment. The manipulation of the physical, chemical or biological characteristics of a site with the goal of restoring wetland functions to a former wetland, resulting in a net increase in wetland acres and functions;

b) Rehabilitation. The manipulation of the physical, chemical or biological characteristics of a site with the goal of repairing historic functions and processes of a degraded wetland, resulting in a gain in wetland functions but not acreage;

(2) Creation (establishment). The manipulation of the physical, chemical or biological characteristics to develop a wetland on an upland or deepwater site, where a biological wetland did not previously exist;

(3) Enhancement. The manipulation of the physical, chemical or biological characteristics to heighten, intensify, or improve specific functions (such as vegetation) or to change the growth stage or composition of the vegetation present, resulting in a change in wetland functions but not in a gain in wetland acreage.

(4) A combination of the three types.

b. Required mitigation ratios are described in TMC Section 18.45.090.E.b.(1). Alternate mitigation ratios may be accepted by the Director upon presentation of justification based on best available science that shows the proposed compensation represents a roughly proportional exchange for the proposed impacts.

(1) Alterations are not permitted to Category I or II wetlands unless specifically exempted under the provisions of this program. When alterations are allowed, mitigation ratios for Category I wetlands shall be at a 4:1 for creation or re-establishment, 8:1 for rehabilitation, and 16:1 for enhancement. Mitigation ratios for Category II wetlands shall be at 3:1 for creation or re-establishment, 6:1 for rehabilitation and 12:1 for enhancement. Creation or re-establishment shall be contiguous to the wetland, unless an exception is authorized by the Director. For Category II estuarine wetlands, re-establishment, creation and enhancement ratios will be decided on a case-by-case basis.

(2) Alterations to Category III wetlands are prohibited except where unavoidable and mitigation sequencing in accordance with this chapter has been utilized and where mitigation is carried out in accordance with the standards in the section. Mitigation for any alteration to a Category III wetland must be provided at a ratio of 2:1 for creation or re-establishment, 4:1 for rehabilitation and 8:1 for enhancement alone.

(3) Mitigation for alteration to a Category IV wetland will be 1.5:1 for creation or re-establishment, 3:1 for rehabilitation or 6:1 for enhancement. Where only a portion of a Category IV wetland is filled, the potential functionality of the remaining reduced wetland must be considered in mitigation planning.

2. The following shall be considered the minimum performance standards for approved wetland alterations:

a. Wetland functions improved over those of the original conditions.

b. Hydrologic conditions and hydroperiods are improved over existing conditions and the specific hydrologic performance standards specified in the approved mitigation plan are achieved.

c. Acreage requirements for creation, re-establishment, rehabilitation or enhancement and for proposed wetland classes are met.

d. Vegetation native to the Pacific Northwest is installed and vegetation survival and coverage standards over time are met and maintained.

e. Habitat features are installed, if habitat is one of the functions to be improved.

f. Buffer and bank conditions and functions exceed the original state.

3. Maintenance and monitoring of mitigation shall be done by the property owner for a period of no less than five years and for ten years when the mitigation plan includes establishing forested wetland and/or buffers. Maintenance shall be carried out in accordance with the approved mitigation plan. Monitoring reports must be submitted to the City for review with the frequency specified in the approved mitigation plan.

4. The Community Development Director may approve, through a Type 2 decision, the transfer of wetland mitigation to a wetland mitigation bank using the criteria in 4.a. through 4.f. below. The Director must determine the number of wetland mitigation bank credits required to meet the mitigation ratios established in TMC Chapter 18.45.

a. Off-site mitigation is proposed in a wetland mitigation bank that has been approved by all appropriate agencies, including the Department of Ecology, Corps of Engineers, EPA and certified under state rules; and

b. The proposed wetland alteration is within the designated service area of the wetland bank; and

c. The applicant provides a justification for the number of credits proposed; and

d. The mitigation achieved through the number of credits required meets the intent of TMC Chapter 18.45; and

e. The Director bases the decision on a written staff report, evaluating the equivalence of the lost wetland functions with the number of wetland credits required; and

f. The applicant provides a copy of the wetland bank ledger demonstrating that the approved number of credits has been removed from the bank.

F. *WETLAND AND BUFFER MITIGATION LOCATION*.

1. In instances where portions of a wetland or wetland buffer impacted by development remain, mitigation for buffer impacts shall be provided on-site. Where an essential public road, street or right-of-way or essential public utility cannot avoid reducing a buffer by more than 50%, additional buffer enhancement must be carried out at other locations around the impacted wetland.

2. On-site mitigation for wetland impacts shall be provided, except where the applicant can demonstrate that:

a. On-site wetland mitigation is not scientifically feasible due to problems with hydrology, soils, waves or other factors; or

b. Mitigation is not practical due to potentially adverse impact from surrounding land uses; or

c. Existing functions created at the site of the proposed restoration are significantly greater than lost wetland functions ; or

d. Regional goals for flood storage, flood conveyance, habitat or other wetland functions have been established and strongly justify location of mitigation at another site.

3. Off-site mitigation shall occur within the same watershed where the wetland loss occurred.

4. Mitigation sites located within the Tukwila City limits are preferred. However, the Director may approve mitigation sites outside the city upon finding that:

a. Adequate measures have been taken to ensure the non-development and long-term viability of the mitigation site; and

b. Adequate coordination with the other affected local jurisdiction has occurred.

5. In selecting mitigation sites, applicants shall select a site in a location where the targeted functions can reasonably be performed and sustained and shall pursue sites in the following order of preference:

a. Sites within the immediate drainage sub-basin;

b. Sites within the next higher drainage sub-basin; and

c. Sites within Green/Duwamish River basin.

G. *MITIGATION TIMING* – Mitigation projects shall be completed prior to activities that will permanently disturb wetlands and either prior to or immediately after activities that will temporarily disturb wetlands. Construction of mitigation projects shall be timed to reduce impacts to existing wildlife, flora and water quality, and shall be completed prior to use or occupancy of the activity or development. The Director may allow activities that permanently disturb wetlands prior to implementation of the mitigation plan under the following circumstances:

1. To allow planting or re-vegetation to occur during optimal weather conditions;

2. To avoid disturbance during critical wildlife periods; or

3. To account for unique site constraints that dictate construction timing or phasing.

(Ord. 2301 §1 (part), 2010)

18.45.100 Watercourse Designations, Ratings and Buffers

A. WATERCOURSE RATINGS. Watercourse ratings are consistent with the Washington Department of Natural Resources water typing categories (noted in parentheses after each category), which are based on the existing habitat functions and are rated as follows:

1. Type 1 (S) Watercourse: Watercourses inventoried as Shorelines of the State, under RCW 90.58. These watercourses shall be regulated under TMC Chapter 18.44, Shoreline Overlay.

2. Type 2 (F) Watercourse: Those watercourses that are known to be used by fish or meet the physical criteria to be potentially used by fish and that have perennial (year-round) or seasonal flows.

3. Type 3 (Np) Watercourse: Those watercourses that have perennial flows and do not meet the criteria of a Type F stream or have been proven not to contain fish using methods described in the Forest Practices Board Manual Section 13.

4. Type 4 (Ns) Watercourse: Those watercourses that have intermittent flows (do not have surface flow during at least some portion of the year) and do not meet the physical criteria of a Type F watercourse.

B. *WATERCOURSE BUFFERS* – Any land alteration must be located out of the buffer areas as required by this section. Watercourse buffers are intended in general to:

1. Minimize long-term impacts of development on properties containing watercourses;

2. Protect the watercourse from adverse impacts during development;

3. Preserve the edge of the watercourse and its buffer for its critical habitat value;

4. Provide shading to maintain stable water temperatures and vegetative cover for additional wildlife habitat;

5. Provide input of organic debris and uptake of nutrients;

6. Provide an area to stabilize banks, to absorb overflow during high water events and to allow for slight variation of aquatic system boundaries over time due to hydrologic or climatic effects;

7. Reduce erosion and increased surface water runoff;

8. Reduce loss of, or damage to, property;

9. Intercept fine sediments from surface water runoff and serve to minimize water quality impacts; and

10. Protect the sensitive area from human and domestic animal disturbance.

An undisturbed sensitive area or buffer may substitute for the yard setback and landscape requirements of TMC Chapter 18.50 and 18.52.

C. *WATERCOURSE BUFFER WIDTHS* – The following buffer widths, measured from the Ordinary High Water Mark (OHWM), apply to each side of a watercourse. If the OHWM cannot be determined, then the buffer will be measured from the top of bank:

1. Type 1 (S) Watercourse: Regulated under TMC Chapter 18.44, Shoreline Overlay.

2. Type 2 (F) Watercourse: 100-foot-wide buffer.

3. Type 3 (Np) Watercourse: 80-foot-wide buffer.

4. Type 4 (Ns) Watercourse: 50-foot-wide buffer.

D. *BUFFER SETBACKS* –

1. All commercial and industrial buildings shall be set back 15 feet and all other development shall be set back 10 feet. Building setbacks shall be measured from the foundation to the buffer's edge. Building plans shall also identify a 20-foot area beyond the buffer setback within which the impacts of development will be reviewed.

2. The Director may waive setback requirements when a site plan demonstrates there will be no impacts to the buffer from construction or occasional maintenance activities (see TMC Figure 18-2).

E. *VARIATION OF STANDARD WATERCOURSE BUFFER WIDTH* –

1. The Director may reduce the standard watercourse buffers on a case-by-case basis, only where the buffer is significantly degraded (due to existing development within the prescribed buffer width, the presence of significant amount of invasive vegetation that impairs buffer function, and/or lack of native vegetation), provided the remaining buffer is enhanced in accordance with an approved buffer enhancement plan, prepared by a qualified professional, and does not contain slopes 15% or greater. Where a buffer has a variable topography that includes Class I slopes on the landward portion of the buffer, a buffer reduction may be allowed if the proposed reduction is in the area with the Class I slopes, and a 10 foot planted setback from the top of the slope is maintained. Further, a geotechnical review of the proposed buffer enhancement plan must determine that the buffer enhancement can be implemented without destabilizing the slope. The approved buffer width shall not result in greater than a 50% reduction in width. Any buffer reduction proposal must demonstrate to the satisfaction of the Director that it will not result

in direct, indirect or long-term adverse impacts to watercourses, and that:

a. The buffer is vegetated and includes an on-site buffer enhancement plan prepared by a qualified professional, to retain existing native vegetation and install additional native vegetation in order to improve the buffer function; or

b. If there is no significant vegetation in the buffer, a buffer may be reduced only if an on-site buffer enhancement plan is provided. The plan must include using a variety of native vegetation that improves the functional attributes of the buffer and provides additional protection for the watercourse functions.

2. Buffers for all types of watercourses will be increased when they are determined to be particularly sensitive to disturbance or the proposed development will create unusually adverse impacts. Any increase in the width of the buffer shall be required only after completion of a watercourse study by a qualified specialist or expert that documents the basis for such increased width. An increase in buffer width may be appropriate when:

a. The development proposal has the demonstrated potential for significant adverse impacts upon the watercourse that can be mitigated by an increased buffer width; or

b. The area serves as habitat for endangered, threatened, sensitive or monitor species listed by the federal government or the State.

3. Every reasonable effort shall be made to maintain the existing viable native plant life and non-invasive significant trees in the buffers. Vegetation may be removed from the buffer as part of an enhancement plan approved by the Director. Enhancements will ensure that slope stability and watercourse quality will be maintained or improved. Any disturbance of the buffers for watercourses shall be replanted with a diverse plant community of native northwest species that are appropriate for the specific site as determined by the Director. If the vegetation must be removed, or because of the alterations of the landscape the vegetation becomes damaged or dies, then the applicant for a permit must replace existing vegetation along watercourses with comparable specimens, approved by the Director, that will restore buffer functions within five years.

4. The Director shall require subsequent corrective actions and long-term monitoring of the project if adverse impacts to regulated watercourses or their buffers are identified.

(Ord. 2301 §1 (part), 2010)

18.45.110 Watercourse Alterations and Mitigation

A. *WATERCOURSE ALTERATIONS.* No use or development may occur in a watercourse or its buffer except as specifically allowed by TMC Chapter 18.45. Any use or development allowed is subject to the standards of TMC Chapter 18.45.

B. *ALTERATIONS.*

1. Diverting or rerouting may only occur with the permission of the Director and an approved mitigation plan.

2. Any watercourse that has critical wildlife habitat, or is necessary for the life cycle or spawning of salmonids, shall not be rerouted unless it can be shown that the habitat will be improved for the benefit of the species.

3. A watercourse may be rerouted or day lighted as a mitigation measure to improve watercourse function.

4. As a condition of approval, the Director may require water quality monitoring for stormwater discharges to streams, and additional treatment of stormwater if water quality standards are not being met.

5. Piping of any watercourse should be avoided. Relocation of a watercourse or installation of a bridge is preferred to piping. If piping occurs in a watercourse sensitive area, it shall be limited to requirements for stream crossings for access and shall require approval of the Director.

a. Piping of Type 1 watercourses shall not be permitted.

b. Piping may be allowed in watercourses if it is necessary for access purposes. In all watercourses, it must be demonstrated that the piping will not cause adverse impacts to fish, confine the channel or floodplain, create an entry point for road run-off, create downstream scouring, cause erosion or sedimentation, or adversely impact riparian habitat (including downstream habitat).

c. Piping projects shall be performed pursuant to the following applicable standards:

(1). The conveyance system shall be designed to comply with the standards in current use and recommended by the Department of Public Works and the standards of the Washington Department of Fish and Wildlife in the "Design of Road Culverts for Fish Passage" manual (2003 or as amended).

(2). Where allowed, piping shall be limited to the shortest length possible as determined by the Director to allow access onto a property.

(3) Where water is piped for an access point, those driveways or entrances shall be consolidated to serve multiple properties where possible, and to minimize the length of piping.

(4) When required by the Director, watercourses under drivable surfaces shall be contained in an arch culvert using oversize or super span culverts for rebuilding of a streambed. These shall be provided with check dams to reduce flows, and shall be replanted and enhanced according to a plan approved by the Director.

(5) All watercourse crossings shall be designed to accommodate fish passage, unless technically not feasible.

(6) Water quality must be as good or better for any water exiting the pipe as for the water entering the pipe, and flow must be comparable.

(7) Maintenance dredging of watercourses shall be allowed only when necessary to protect public safety, structures and fish passage and shall be done as infrequently as

possible. Long-term solutions such as stormwater retrofits are preferred over ongoing maintenance dredging.

d. Stormwater runoff shall be detained and infiltrated to preserve the watercourse channel's dominant discharge.

e. All construction shall be designed to have the least adverse impact on the watercourse, buffer and surrounding environment.

f. All piping or other alterations shall be carried out or constructed during periods of low flow, or as specified by the State Department of Fish and Wildlife in accordance with an approved Hydraulics Permit.

g. On properties being developed or re-developed, or when stream crossings in public or private rights-of-way are being replaced, existing culverts that carry fish-bearing watercourses or those that could bear fish (based on the criteria in WAC 222-16-031, Washington Forest Practices Rules and Regulations), shall be upgraded to meet the standards in the WDFW manual "Design of Road Culverts for Fish Passage" (2003 or as updated) if technically feasible.

C. *MITIGATION PLAN CONTENT*. All impacts to a watercourse that degrade the functions of the watercourse or its buffer shall be avoided. If alteration to the watercourse or buffer is unavoidable, all adverse impacts resulting from a development proposal or alteration shall be mitigated in accordance with an approved mitigation plan as described below.

1. Mitigation plans shall be completed for any proposals of dredging, filling, diverting, piping and rerouting of watercourses or buffer impacts and shall be developed as part of a sensitive area study by a specialist approved by the Director. The plan must show how water quality, treatment, erosion control, pollution reduction, wildlife and fish habitat, and general watercourse quality would be improved.

2. The scope and content of a mitigation plan shall be decided on a case-by-case basis taking into account the degree of impact and extent of mitigation measures needed. As the impacts to the watercourse or its buffer increase, the mitigation plan to offset these impacts will increase in extent and complexity.

3. The components of a complete mitigation plan are as follows:

a. Baseline information including existing watercourse conditions such as hydrologic patterns/flow rates, stream gradient, bank full width, stream bed conditions, bank conditions, fish and other wildlife use, in-stream structures, riparian conditions, buffer characteristics, water quality, fish barriers and other relevant information.

b. Environmental goals and objectives that describe the purposes of the mitigation measures. This should include a description of site selection criteria, identification of target evaluation species and functions.

c. Performance standards for fulfilling environmental goals and objectives and for triggering remedial action or contingency measures. Performance standards may include water quality standards, species richness and diversity targets, habitat diversity indices, creation of fish habitat, or other ecological, geological or hydrological criteria.

d. Detailed construction plan of the written specifications and descriptions of mitigation techniques. This plan should include the proposed construction sequence and construction management, and be accompanied by detailed site diagrams and blueprints that are an integral requirement of any development proposal.

e. Monitoring and/or evaluation program that outlines the approach for assessing a completed project. An outline shall be included that spells out how the monitoring data will be evaluated by agencies that are tracking the mitigation project's process. For projects that discharge stormwater to a stream, the Director may require water quality monitoring.

f. Contingency plan identifying potential courses of action and any corrective measures to be taken when monitoring or evaluation indicates project performance standards have not been met.

g. Performance security or other assurance devices as described in TMC Section 18.45.210.

D. *MITIGATION STANDARDS*–

1. The Washington "Stream shore Program, Washington Department of Ecology, US Fish and Wildlife Service, Washington Department of Fish and Wildlife, 2004 or as amended) shall be used as Best Available Science for the development of watercourse and buffer mitigation techniques.

2. The following shall be considered the minimum standards for approved stream alterations:

a. Maintenance or improvement of stream channel habitat and dimensions such that the fisheries habitat functions of the compensatory stream reach or exceed that of the original stream;

b. Bank and buffer configuration restored to an enhanced state;

c. Channel, bank and buffer areas replanted with native vegetation that improves the original in species diversity and density;

d. Stream channel bed and biofiltration systems equivalent to (in the case of public drainage maintenance projects) and better than in the original stream (in the case of other kinds of projects);

e. Original fish and wildlife habitat enhanced unless technically not feasible.

3. Relocation of a watercourse shall not result in the new sensitive area or buffer extending beyond the development site and onto adjacent property without the written agreement of the affected property owners.

F. *MITIGATION TIMING* – Department of Community Development-approved plans must have the mitigation construction completed before the existing watercourse can be modified. The Director may allow activities that permanently disturb a watercourse prior to implementation of the mitigation plan under the following circumstances:

1. To allow planting or re-vegetation to occur during optimal weather conditions; or

2. To avoid disturbance during critical wildlife periods; or

3. To account for unique site constraints that dictate construction timing or phasing.

(Ord. 2301 §1 (part), 2010)

18.45.120 Areas of Potential Geologic Instability Designation, Rating and Buffers

A. *DESIGNATION* – Areas of potential geologic instability are classified as follows:

1. Class 1 area, where landslide potential is low, and which slope is less than 15%;

2. Class 2 areas, where landslide potential is moderate, which slope is between 15% and 40%, and which are underlain by relatively permeable soils;

3. Class 3 areas, where landslide potential is high, which include areas sloping between 15% and 40%, and which are underlain by relatively impermeable soils or by bedrock, and which also include all areas sloping more steeply than 40%;

4. Class 4 areas, where landslide potential is very high, which include sloping areas with mappable zones of groundwater seepage, and which also include existing mappable landslide deposits regardless of slope;

B. *BUFFERS* – The buffers for areas of potential geologic instability are intended to:

1. Minimize long-term impacts of development on properties containing sensitive areas;

2. Protect sensitive areas from adverse impacts during development;

3. Prevent loading of potentially unstable slope formations;

4. Protect slope stability;

5. Provide erosion control and attenuation of precipitation surface water and stormwater runoff; and

6. Reduce loss of or damage to property.

An undisturbed sensitive area or buffer may substitute for the yard setback and landscape requirements of TMC Section 18.50 and 18.52.

C. Each development proposal containing or threatened by an area of potential geologic instability Class 2 or higher shall be subject to a geotechnical report pursuant to the requirements of TMC Chapter 18.45.040 C, and 18.45.060. The geotechnical report shall analyze and make recommendations on the need for and width of any setbacks or buffers necessary to achieve the goals and requirements of TMC Chapter 18.45. Development proposals shall then include the buffer distances as defined within the geotechnical report.

D. Buffers may be increased by the Director when an area is determined to be particularly sensitive to the disturbance created by a development. Such a decision will be based on a City review of the report as prepared by a qualified geotechnical engineer and by a site visit.

(Ord. 2368 §49, 2012; Ord. 2301 §1 (part), 2010)

18.45.130 Areas of Potential Geologic Instability Uses, Exemptions, Alterations and Mitigation.

A. *GENERAL* – The uses permitted in the underlying zoning district may be undertaken on sites that contain areas of potential geologic instability subject to the standards of this section and the recommendations of a geotechnical study.

B. *EXEMPTIONS* – The following areas are exempt from regulation as geologically hazardous areas:

1. Temporary stockpiles of topsoil, gravel, beauty bark or other similar landscaping or construction materials;

2. Slopes related to materials used as an engineered pre-load for a building pad;

3. Any temporary slope that has been created through legal grading activities under an approved permit may be re-graded without application of TMC Chapter 18.45 under an approved permit;

4. Roadway embankments within right-of-way or road easements; and

5. Slopes retained by approved engineered structures.

C. *ALTERATIONS* –

1. Prior to permitting alteration of an area of potential geologic instability, the applicant must demonstrate one of the following:

a. There is no evidence of past instability or earth movement in the vicinity of the proposed development, and where appropriate, quantitative analysis of slope stability indicates no significant risk to the proposed development or surrounding properties; or

b. The area of potential geologic instability can be modified or the project can be designed so that any potential impact to the project and surrounding properties is eliminated, slope stability is not decreased, and the increase in surface water discharge or sedimentation shall not decrease slope stability.

2. Where any portion of an area of potential geologic instability is cleared for development, a landscaping plan for the site shall include tree replanting with an equal mix of evergreen and deciduous trees, preferably native, and approved by the Director. Replacement vegetation shall be sufficient to provide erosion and stabilization protection.

D. *DISCLOSURES, DECLARATIONS AND COVENANTS*

1. It shall be the responsibility of the applicant to submit, consistent with the findings of the geotechnical report, structural plans that were prepared and stamped by a structural engineer. The plans and specifications shall be accompanied by a letter from the geotechnical engineer who prepared the geotechnical report stating that in his/her judgment the plans and specifications conform to the recommendations in the geotechnical report, the risk of damage to the proposed development site from soil instability will be minimal subject to the conditions set forth in the report, and the proposed development will not increase the potential for soil movement.

2. Further recommendations signed and sealed by the geotechnical engineer shall be provided should there be additions or exceptions to the original recommendations based on the plans,

site conditions or other supporting data. If the geotechnical engineer who reviews the plans and specifications is not the same engineer who prepared the geotechnical report, the new engineer shall, in a letter to the City accompanying the plans and specifications, express his or her agreement or disagreement with the recommendations in the geotechnical report and state that the plans and specifications conform to his or her recommendations.

3. The architect or structural engineer shall submit to the City, with the plans and specifications, a letter or notation on the design drawings at the time of permit application stating that he or she has reviewed the geotechnical report, understands its recommendations, has explained or has had explained to the owner the risks of loss due to slides on the site, and has incorporated into the design the recommendations of the report and established measures to reduce the potential risk of injury or damage that might be caused by any earth movement predicted in the report.

4. The owner shall execute a Sensitive Areas Covenant and Hold Harmless Agreement running with the land on a form provided by the City. The City will file the completed covenant with the King County Department of Records and Elections at the expense of the applicant or owner. A copy of the recorded covenant will be forwarded to the owner.

E. *ASSURANCE DEVICES* – Whenever the City determines that the public interest would not be served by the issuance of a permit in an area of potential geologic instability without assurance of a means of providing for restoration of areas disturbed by, and repair of property damage caused by, slides arising out of or occurring during construction, the Director may require assurance devices pursuant to TMC Section 18.45.210.

F. *CONSTRUCTION MONITORING* –

1. Where recommended by the geotechnical report, the applicant shall retain a geotechnical engineer to monitor the site during construction. The applicant shall preferably retain the geotechnical engineer who prepared the final geotechnical recommendations and reviewed the plans and specifications. If a different geotechnical engineer is retained by the owner, the new geotechnical engineer shall submit a letter to the City stating whether or not he/she agrees with the opinions and recommendations of the original geotechnical engineer. Further recommendations, signed and sealed by the geotechnical engineer, and supporting data shall be provided should there be exceptions to the original recommendations.

2. The geotechnical engineer shall monitor, during construction, compliance with the recommendations in the geotechnical report, particularly site excavation, shoring, soil support for foundations including piles, subdrainage installations, soil compaction and any other geotechnical aspects of the construction. Unless otherwise approved by the City, the specific recommendations contained in the soils report must be implemented by the owner. The geotechnical engineer shall make written, dated monitoring reports on the progress of the construction to the City at such timely intervals as shall be specified. Omissions or deviations from the approved plans and specifications shall be immediately reported to the City. The final construction monitoring report shall contain a statement from the geotechnical engineer that based upon his or her professional opinion, site observations and testing during the monitoring of the construction, the completed development substantially complies with the recommendations in the geotechnical report and with all geotechnical-related permit requirements. Occupancy of the project will not be approved until the report has been reviewed and accepted by the Director.

G. *CONDITIONING AND DENIAL OF USE OR DEVELOPMENTS* –

1. Substantial weight shall be given to ensuring continued slope stability and the resulting public health, safety and welfare in determining whether a development should be allowed.

2. The City may impose conditions that address site-work problems which could include, but are not limited to, limiting all excavation and drainage installation to the dryer season, or sequencing activities such as installing erosion control and drainage systems well in advance of construction. A permit will be denied if it is determined by the Director that the development will increase the potential of soil movement that results in an unacceptable risk of damage to the proposed development, its site or adjacent properties.

(Ord. 2301 §1 (part), 2010)

18.45.140 Abandoned Mine Areas

A. Development of a site containing an abandoned mine area may be permitted when a geotechnical report shows that significant risks associated with the abandoned mine workings can be eliminated or mitigated so that the site is safe. Approval shall be obtained from the Director before any building or land-altering permit processes begin.

B. Any building setback or land alteration shall be based on the geotechnical report.

C. The City may impose conditions that address site-work problems which could include, but are not limited to, limiting all excavation and drainage installation to the dryer season, or sequencing activities such as installing drainage systems or erosion controls well in advance of construction. A permit will be denied if it is determined that the development will increase the potential of soil movement or result in an unacceptable risk of damage to the proposed development or adjacent properties.

D. The owner shall execute a Sensitive Areas Covenant and Hold Harmless Agreement running with the land on a form provided by the City. The City will file the completed covenant with the King County Division of Records and Elections at the expense of the applicant or owner. A copy of the recorded covenant will be forwarded to the owner.

(Ord. 2301 §1 (part), 2010)

18.45.150 Fish and Wildlife Habitat Conservation Areas Designation, Mapping, Uses and Standards

A. *DESIGNATION* – Fish and wildlife habitat conservation areas include the habitats listed below:

1. Areas with which endangered, threatened, and sensitive species have a primary association;

2. Habitats and species of local importance, including but not limited to bald eagle habitat, heron rookeries;

3. Commercial and recreational shellfish areas;

4. Kelp and eelgrass beds;

5. Mudflats and marshes;

6. Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat;

7. Waters of the State;

8. State natural area preserves and natural resource conservation areas; and

9. Areas critical for habitat connectivity.

B. *MAPPING* –

1. The approximate location and extent of known fish and wildlife habitat conservation areas are identified by the City's Sensitive Areas Maps, inventories, open space zones, and Natural Environment Background Report. The City designates 1, 2, 5, 6, 7, and 9 above as known fish and wildlife habitats within its current limits.

2. Fish and wildlife habitat conservation areas correlate closely with the areas identified as regulated watercourses and wetlands and their buffers in Tukwila. The Green/Duwamish River is recognized as the most significant fish and wildlife habitat corridor, as well as off-channel habitat areas created in the river to improve salmon habitat (shown on the Sensitive Areas Map) in the Shoreline jurisdiction. Gilliam Creek, Riverton Creek, Southgate Creek, Johnson Creek, and Hamm Creek (in the north PAA) all provide salmonid habitat. In addition, the Native Growth Protection Area in the Tukwila South project area provides an important upland wildlife habitat corridor. Tukwila Pond and its associated wetlands also meet the definition of a fish and wildlife habitat for waterfowl and other birds during all seasons of the year. In addition to the Sensitive Areas Maps, the following maps are to be used as a guide for the City, but do not provide a final habitat area designation:

a. Washington State Department of Fish and Wildlife Priority Habitat Species Maps;

b. Anadromous and resident salmonid distribution maps contained in the Habitat Limiting Factors reports published by the Washington Conservation Commission; and

c. Washington State Digital Coastal and Coastal Zone Management Program.

C. *BUFFERS* - Fish and Wildlife Habitat Conservation Areas shall have buffers no less than 100 feet in width. Buffer reductions approved for an underlying wetland or watercourse shall also apply to the related Conservation Area.

D. *USES AND STANDARDS* – Fish and wildlife habitat conservation areas will be regulated through TMC Chapter 18.44, Shoreline Overlay District, and the regulations in TMC Chapter 18.45 related to wetlands and watercourses. No additional use regulations apply specifically to Conservation Areas.

(Ord. 2301 §1 (part), 2010)

18.45.160 Sensitive Area Master Plan Overlay

A. The purpose of this section is to provide an alternative to preservation of existing individual wetlands, watercourses and their buffers in situations where an area-wide plan for alteration and mitigation will result in improvements to water quality, fish and wildlife habitat and hydrology beyond those that would occur through the strict application of the provisions of TMC Chapter 18.45.

B. The City Council may designate certain areas as Sensitive Area Master Plan Overlay Districts for the purpose of allowing and encouraging a comprehensive approach to sensitive area protection, restoration, enhancement and creation in appropriate circumstances utilizing best available science. Designation of Sensitive Area Master Plan Overlay Districts shall occur through the Type 5 decision process established by TMC Chapter 18.104.

C. Criteria for designating a Sensitive Area Master Plan Overlay District shall be as follows:

1. The overlay area shall be at least 10 acres.

2. The City Council shall find that preparation and implementation of a Sensitive Area Master Plan is likely to result in net improvements in sensitive area functions when compared to development under the general provisions of TMC Chapter 18.45.

D. Within a Sensitive Area Master Plan Overlay District, only those uses permitted under TMC Sections 18.45.070, 18.45.090 and 18.45.110 shall be allowed within a Category I wetland, a Type 1 (S) watercourse, or their buffers.

E. Within a Sensitive Area Master Plan Overlay district, the uses permitted under TMC 18.45.070, 18.45.090 and 18.45.110 and other uses as identified by an approved Sensitive Area Master Plan shall be permitted within Category III and Category IV wetlands and their buffers; and within Type 2, (F) 3 (Np) and 4 (Ns) watercourses and their buffers, provided that such uses are allowed by the underlying zoning designation.

F. A Sensitive Area Master Plan shall be prepared under the direction of the Director of Community Development. Consistent with subsection A, the Director may approve development activity within a Sensitive Area Overlay District for the purpose of allowing and encouraging a comprehensive approach to sensitive areas protection, creation, and enhancement that results in environmental benefits that may not be otherwise achieved through the application of the requirements of TMC Chapter 18.45.

G. The Director shall consider the following factors when determining whether a proposed Sensitive Areas Overlay and Master Plan results in an overall net benefit to the environment and is consistent with best available science:

1. Whether the Master Plan is consistent with the goals and policies of the Natural Environment Element of the Tukwila Comprehensive Plan.

2. Whether the Master Plan is consistent with the purposes of TMC Chapter 18.45 as stated in TMC Section 18.45.010.

3. Whether the Master Plan includes a Mitigation Plan that incorporates stream or wetland restoration, enhancement or creation meeting or exceeding the requirements of TMC Section 18.45.090 and/or TMC Section 18.45.110 , as appropriate.

4. Whether proposed alterations or modifications to sensitive areas and their buffers and/or alternative mitigation results in an overall net benefit to the natural environment and improves sensitive area functions.

5. Whether the Mitigation Plan gives special consideration to conservation and protection measures necessary to preserve or enhance anadromous fisheries.

6. Mitigation shall occur on-site unless otherwise approved by the Director. The Director may approve off-site mitigation only upon determining that greater protection, restoration or enhancement of sensitive areas could be achieved at an alternative location within the same watershed.

7. Where feasible, mitigation shall occur prior to grading, filling or relocation of wetlands or watercourses.

8. At the discretion of the Director, a proposed Master Plan may undergo peer review, at the expense of the applicant. Peer review, if utilized, shall serve as one source of input to be utilized by the Director in making a final decision on the proposed action.

H. A Sensitive Area Master Plan shall be subject to approval by the Director of Community Development. Such approval shall not be granted until the Master Plan has been evaluated through preparation of an Environmental Impact Statement (EIS) under the requirements of TMC Chapter 21.04. The EIS shall compare the environmental impacts of development under the proposed Master Plan relative to the impacts of development under the standard requirements of TMC Chapter 18.45. The Director shall approve the Sensitive Area Master Plan only if the evaluation clearly demonstrates overall environmental benefits, giving special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries.

(Ord. 2301 §1 (part), 2010)

18.45.170 Sensitive Areas Tracts and Easements

A. In development proposals for planned residential or mixed use developments, short subdivisions or subdivisions, and boundary line adjustments and binding site plans, applicants shall create sensitive areas tracts or easements, in lieu of an open space tract, per the standards of the Planned Residential Development District chapter of this title.

B. Applicants proposing development involving uses other than those listed in TMC Section 18.45.170A, on parcels containing sensitive areas or their buffers, may elect to establish a sensitive areas tract or easement which shall be:

1. If under one ownership, owned and maintained by the ownership;

2. If held in common ownership by multiple owners, maintained collectively; or

3. Dedicated for public use if acceptable to the City or other appropriate public agency.

C. A notice shall be placed on the property title or plat map that sensitive area tracts or easements shall remain undeveloped in perpetuity.

(Ord. 2301 §1 (part), 2010)

18.45.180 Exceptions

A. *REASONABLE USE EXCEPTIONS* –

1. If application of TMC Chapter 18.45 would deny all reasonable use of the property containing wetlands, watercourses or their buffers, the property owner or the proponent of a development proposal may apply for a reasonable use exception.

2. Applications for a reasonable use exception shall be a Type 3 decision and shall be processed pursuant to TMC Chapter 18.104.

3. If the applicant demonstrates to the satisfaction of the Hearing Examiner that application of the provisions of TMC Chapter 18.45 would deny all reasonable use of the property, development may be allowed that is consistent with the general purposes of TMC Chapter 18.45 and the public interest.

4. The Hearing Examiner, in granting approval of the reasonable use exception, must determine that:

a. There is no feasible on-site alternative to the proposed activities, including reduction in size or density, modifications of setbacks, buffers or other land use restrictions or requirements, phasing of project implementation, change in timing of activities, revision of road and lot layout, and/or related site planning that would allow a reasonable economic use with fewer adverse impacts to the sensitive area.

b. As a result of the proposed development there will be no unreasonable threat to the public health, safety or welfare on or off the development proposal site.

c. Alterations permitted shall be the minimum necessary to allow for reasonable use of the property.

d. The proposed development is compatible in design, scale and use with other development with similar site constraints in the immediate vicinity of the subject property if such similar sites exist.

e. Disturbance of sensitive areas has been minimized by locating any necessary alterations in the buffers to the greatest extent possible.

f. The inability to derive reasonable use of the property is not the result of:

(1) a segregation or division of a larger parcel on which a reasonable use was permittable after the effective date of Sensitive Areas Ordinance No. 1599, June 10, 1991;

(2) actions by the owner of the property (or the owner's agents, contractors or others under the owner's control) that occurred after the effective date of the sensitive areas

ordinance provisions that prevents or interferes with the reasonable use of the property; or

(3) a violation of the sensitive areas ordinance;

g. The Hearing Examiner, when approving a reasonable use exception, may impose conditions, including but not limited to a requirement for submission and implementation of an approved mitigation plan designed to ensure that the development:

(1) complies with the standards and policies of the sensitive areas ordinance to the extent feasible; and

(2) does not create a risk of damage to other property or to the public health, safety and welfare.

h. Approval of a reasonable use exception shall not eliminate the need for any other permit or approval otherwise required for a project, including but not limited to design review.

B. *EMERGENCIES* – Alterations in response to an emergency that poses an immediate threat to public health, safety or welfare, or that poses an immediate risk of damage to private property may be excepted. Any alteration undertaken as an emergency shall be reported within one business day to the Community Development Department. The Director shall confirm that an emergency exists and determine what, if any, mitigation and conditions shall be required to protect the health, safety, welfare and environment and to repair any damage to the sensitive area and its required buffers. Emergency work must be approved by the City. If the Director determines that the action taken, or any part thereof, was beyond the scope of an allowed emergency action, then the enforcement provisions of TMC Section 18.45.195 shall apply.

(Ord. 2368 §50, 2012; Ord. 2301 §1 (part), 2010)

18.45.190 Appeals

A. Any appeal of a final decision made by the Community Development Department, pursuant to TMC Chapter 18.45, shall be an appeal of the underlying permit or approval. Any such appeal shall be processed pursuant to TMC Section 18.108.020 and TMC Chapter 18.116.

B. In considering appeals of decisions or conditions, the following shall be considered:

1. The intent and purposes of the sensitive areas ordinance;

2. Technical information and reports considered by the Community Development Department; and

3. Findings of the Director, which shall be given substantial weight.

(Ord. 2301 §1 (part), 2010)

18.45.195 Appeals

A. *VIOLATIONS*. The following actions shall be considered a violation of this chapter:

1. To use, construct or demolish a structure or to conduct clearing, earth-moving, construction or other development not authorized under a Special Permission, Reasonable Use or other permit where such permit is required by this chapter.

2. Any work that is not conducted in accordance with the plans, conditions, or other requirements in a permit approved pursuant to this chapter, provided the terms or conditions are stated in the permit or the approved plans.

3. To remove or deface any sign, notice, complaint or order required by or posted in accordance with this chapter.

4. To misrepresent any material fact in any application, plans or other information submitted to obtain any sensitive area use, buffer reduction or development authorization.

5. To fail to comply with the requirements of this chapter.

B. *ENFORCEMENT*. It shall be the duty of the Community Development Director to enforce this chapter pursuant to the terms and conditions of TMC Chapter 8.45.

C. *INSPECTION ACCESS.*

1. For the purposes of inspection for compliance with the provisions of a permit or this chapter, authorized representatives of the Community Development Director may enter all sites for which a permit has been issued.

2. Upon completion of all requirements of a permit, the applicant shall request a final inspection by contacting the planner of record. The permit process is complete upon final approval by an authorized representative of the Community Development Director.

D. *PENALTIES.*

1. Any violation of any provision of this chapter, or failure to comply with any of the requirements of this chapter, shall be subject to the penalties prescribed in TMC Chapter 8.45, "Enforcement," and shall be imposed pursuant to the procedures and conditions set forth in that chapter.

2. It shall not be a defense to the prosecution for failure to obtain a permit required by this chapter that a contractor, subcontractor, person with responsibility on the site, or person authorizing or directing the work erroneously believed a permit had been issued to the property owner or any other person.

E. *REMEDIAL MEASURES REQUIRED*. In addition to penalties provided in TMC Chapter 8.45, the Director may require any person conducting work in violation of this chapter to mitigate the impacts of unauthorized work by carrying out remedial measures.

1. Remedial measures must conform to the policies and guidelines of this chapter.

2. The cost of any remedial measures necessary to correct violation(s) of this chapter shall be borne by the property owner and/or applicant.

F. *INJUNCTIVE RELIEF.*

1. Whenever the City has reasonable cause to believe that any person is violating or threatening to violate the sensitive areas regulations or any rule or other provisions adopted or issued pursuant to these regulations, it may either before or after the institution of any other action or proceeding authorized by this ordinance, institute a civil action in the name of the City for injunctive relief to restrain the violation or threatened violation. Such action shall be brought in King County Superior Court.

2. The institution of an action for injunctive relief under this section shall not relieve any party to such proceedings from any civil or criminal penalty prescribed for violations of these regulations.

G. *ABATEMENT.* - Any use, structure, development or work that occurs in violation of these regulations, or in violation of any lawful order or requirement of the Director pursuant to this section, shall be deemed to be a public nuisance and may be abated in the manner provided by the Tukwila Municipal Code, Section 8.45.105.

(Ord. 2301 §1 (part), 2010)

18.45.200 Recording Required

The property owner receiving approval of a use or development permit pursuant to TMC Chapter 18.45 shall record the City-approved site plan, clearly delineating the wetland, watercourse, areas of potential geologic instability or abandoned mine and their buffers designated by TMC Sections 18.45.080, 18.45.090, 18.45.100, 18.45.120, 18.45.140 and 18.45.150 with the King County Division of Records and Elections. The face of the site plan must include a statement that the provisions of TMC Chapter 18.45, as of the effective date of the ordinance from which TMC Chapter 18.45 derives or is thereafter amended, control use and development of the subject property, and provide for any responsibility of the property owner for the maintenance or correction of any latent defects or deficiencies.

(Ord. 2301 §1 (part), 2010)

18.45.210 Assurance Device

A. In appropriate circumstances, such as when mitigation is not completed in advance of the project, the Director may require a letter of credit or other security device acceptable to the City to guarantee performance and maintenance requirements of TMC Chapter 18.45. All assurances shall be on a form approved by the City Attorney and be equal to 150% of the cost of the labor and materials for implementation of the approved mitigation plan.

B. When alteration of a sensitive area is approved, the Director may require an assurance device, on a form approved by the City Attorney, to cover the cost of monitoring and maintenance costs and correction of possible deficiencies for five years. In the event that more than five years monitoring and maintenance is required, the amount of security required will be for the first five years and years 7 and 10. If at the end of five years performance standards are not being achieved, an increase in the security device may be required by the Director. When another agency requires monitoring beyond the City's time period, copies of those monitoring reports shall be provided to the City.

C. The assurance device shall be released by the Director upon receipt of written confirmation submitted to the Department from the applicant's qualified professional that the mitigation or restoration has met its performance standards and is successfully established. Should the mitigation or restoration meet performance standards and be successfully established in the third or fourth year of monitoring, the City may release the assurance device early. The assurance device may be held for a longer period, if at the end of the monitoring period, the performance standards have not been met or the mitigation has not been successfully established. In such cases, the monitoring period will be extended and the bond held until the standards have been met.

D. Release of the security does not absolve the property owner of responsibility for maintenance or correcting latent defects or deficiencies or other duties under law.

(Ord. 2301 §1 (part), 2010)

18.45.220 Assessment Relief

A. *FAIR MARKET VALUE* – The King County Assessor considers sensitive area regulations in determining the fair market value of land under RCW 84.34.

B. *CURRENT USE ASSESSMENT* – Established sensitive area tracts or easements, as defined in the Definitions chapter of this title and provided for in TMC Section 18.45.170, may be classified as open space and owners thereof may qualify for current use taxation under RCW 18.34; provided, such landowners have not received density credits, or setback or lot size adjustments as provided in the Planned Residential Development District chapter of this title.

C. *SPECIAL ASSESSMENTS* – Landowners who qualify under TMC Section 18.45.220 B shall also be exempted from special assessments on the sensitive area tract or easement to defray the cost of municipal improvements such as sanitary sewers, storm sewers and water mains.

(Ord. 2301 §1 (part), 2010)

Best Available Science Review and Gap Analysis

City of Tukwila Sensitive Areas Ordinance

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The Watershed Company Reference Number:
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ATTACHMENT D

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1 Introduction

The Growth Management Act (GMA) mandates that cities develop policies and regulations to designate and protect critical areas, including wetlands, areas with a critical recharging effect on aquifers used for potable water, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas (Revised Code of Washington [RCW] 36.70A.030(5)).

The GMA further requires that cities periodically review and evaluate their adopted critical areas policies and regulations, and that this review and update process consider and include best available science (BAS). Any deviations from science-based recommendations should be identified, assessed, and explained (Washington Administrative Code [WAC] 365-195-915). In addition, cities are to give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries.

In accordance with the GMA, the City of Tukwila (City) last completed a comprehensive update of its critical areas policies and regulations in 2010. The City's critical areas regulations are codified in Title 18, Zoning, of Tukwila Municipal Code (TMC Chapter 18.45). This code section includes the text from the adopted Sensitive Areas Ordinance (SAO), Ordinance No. 2301.

The purpose of this memorandum is to provide a review of the City's current SAO, noting gaps where existing regulations may not be consistent with BAS, the GMA, and/or its implementing rules. This document does not attempt to identify every instance where the existing SAO might be amended, but instead focuses on identifying more significant potential amendments. The primary intention of this gap analysis is to help guide the update of the City's SAO.

Sections 1 through 4 of this report provide a summary of the review and recommended changes to the four main subject areas in the City's SAO. Section 5 addresses frequently flooded areas, which are defined as critical areas under the GMA but regulated by the City's flood damage prevention ordinance outside of the SAO. Finally, Section 6 provides recommendations for general protective provisions. To highlight the findings of the gap analysis, a summary table is provided at the beginning of each section.

2 Wetlands

To better incorporate BAS into the wetlands code section, several code revisions are recommended (Table 1-1).

Table 1-1. Recommended revisions to wetlands regulations.

Code Section	Title	Review Comment / Recommendations*
18.45.080.A	Wetland Designations	• Remove reference to State delineation manual • Replace with identification and delineation language from WAC 173-22-035 • Consider defining period of validity for wetland delineations
18.45.080.B	Wetland Ratings	• Reference latest version of State rating system

18.45.080.D	Wetland Buffer Widths	• Update buffer width requirements to align with BAS
18.45.080.F	Variation of Standard Wetland Buffer Width	• Revise buffer averaging/reduction scheme to align with BAS
18.45.090.B	Alterations	• Update small wetland exemptions per BAS
18.45.090.E	Mitigation Standards	• Consider specifying mitigation ratio for buffer impacts • Consider adding a requirement for mitigation site protection
18.45.090.F	Wetland and Buffer Mitigation Location	• Consider integrating mitigation bank provisions into hierarchy defined in this section

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

2.1 Wetland Designations (TMC 18.45.080.A)

TMC 18.45.080.A refers to the "Washington State Wetland and Delineation Manual [sic], as required by RCW 36.70A.175 (Ecology Publication #96-94) and consistent with the 1987 Corps of Engineers Wetland Delineation Manual." This section should be updated to include the language from WAC 173-22-035, which states that "Identification of wetlands and delineation of their boundaries… shall be done in accordance with the approved federal wetland delineation manual and applicable regional supplements."

The Washington State Department of Ecology (Ecology) model wetlands chapter (Ecology 2016) also recommends the following language: "Wetland delineations are valid for five years; after such date the City shall determine whether a revision or additional assessment is necessary."

2.2 Wetland Ratings (TMC 18.45.080.B)

TMC 18.45.080.B refers to the "Washington State Wetlands Rating System for Western Washington, (Washington State Department of Ecology, August 2004, Publication #04-06-025)." Ecology updated this rating system in June of 2014. The current BAS-based wetland rating system is the *Washington State Wetland Rating System for Western Washington* (Hruby 2014, Ecology publication No. 14-06-029). Using reference wetlands, Ecology calibrated the updated 2014 wetland rating system to maintain roughly the same distribution of wetland categories that were present under the prior 2004 rating system. A comparison sample of the distribution of wetland categories under the old and new rating systems is provided in Table 1-2 below (Hruby 2014).

Table 1-2. Number of sampled wetlands in each category based on their score for functions.

Category	2004 Rating System	2014 Rating System
I	13	11
II	52	44
III	39	49
IV	7	7

The substantive changes to the wetland rating system are: 1) a High, Medium, or Low ranking for each function instead of numeric scores; and 2) the opportunity section was replaced with two new sections: landscape potential and value. The shift to a High, Medium, Low ranking

scheme was prompted by a statistical analysis of wetland rating data, which indicated that the rapid-assessment wetland rating tool is not scientifically accurate beyond a qualitative ranking. As a result of this change, the total point range changed from 0-100 to 9-27 (Hruby 2014), with nine possible points each for water quality, hydrologic, and habitat functions.

In addition to updating the reference to the rating system itself, the City should update the individual point score references for each wetland category throughout TMC 18.45.080.B.

If the City wishes to avoid the need for future updates related to rating system versions, it should consider amending this section to refer to the 2014 rating system, "…or as revised and approved by Ecology," and removing references to specific point values.

2.3 Wetland Buffer Widths (TMC 18.45.080.D)

The City's existing wetland buffer widths are based on a departure from BAS supported by an analysis completed as part of the City's 2010 SAO update. The analysis evaluated existing buffer conditions and effective widths for "a representative sample of its wetlands" (City of Tukwila 2010). The departure memorandum states, "In general Tukwila wetlands would score very low for habitat function due to the urbanized nature of the city and the fact that most of the wetlands are isolated and surrounded by dense development" (City of Tukwila 2010). Accordingly, the standard buffer widths included in the City's regulations match Ecology's recommended standard buffers for wetlands with low habitat scores (fewer than six points under the 2014 rating system) adjacent to a proposed land use with high-intensity impacts (Table 1-3). The Watershed Company conducted an updated evaluation of the City's mapped wetlands in 2018 under the 2014 Western Washington Rating System. The updated analysis confirmed that the majority of wetlands within the City do have low habitat scores, and the remaining wetlands appear to have moderate habitat scores of six or seven under the 2014 Rating System.

Table 1-3. Standard wetland buffer widths in TMC and Ecology 2014.

Category	Wetland buffer width (ft), TMC	Wetland buffer width (ft), Ecology 2014, high-intensity land use impact		
		Habitat score <6	Habitat score 6-7	Habitat score 8-9
I	**100**	**100**	150	300
II	**100**	**100**	150	300
III	**80**	**80**	150	300
IV	**60**	**50**	50	50

For those projects that can mitigate the impacts and disturbances associated with surrounding land use, required buffer widths may be reduced. Table 1-4 lists impact-minimization measures which, when implemented in combination with a wildlife corridor to adjacent priority habitats where applicable, allow an applicant to reduce the standard buffer widths by up to 25 percent (Ecology 2016). The resulting standard buffer widths range according to habitat score from 75 to 225 feet for Category I and II wetlands and from 60 to 225 feet for Category III wetlands, and are 40 feet for Category IV wetlands.

Table 1-4. Measure to minimize impacts to wetlands (Ecology 2016)

Disturbance	Required Measures to Minimize Impacts
Lights	• Direct lights away from wetland
Noise	• 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	• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 feet of wetland • Apply integrated pest management
Stormwater runoff	• 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 (LID) techniques where appropriate (for more information refer to the drainage ordinance and manual)
Change in water regime	• Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	• 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	• Use best management practices to control dust

While the City's current approach results in a simpler set of standard buffers for the City to implement, it does not reflect the range of existing and potential wetland conditions present in Tukwila. Specifically, it does not account for any wetlands that provide greater than the lowest habitat function, despite the 2010 and 2018 analyses identifying several such wetlands. As a result, any opportunity to protect rare wetland habitat functions where they do exist, and/or where larger buffers are currently present (e.g. wetland complex near the intersection of 65th Avenue and Military Road wetland), is lost.

We recommend that the City update its buffer provisions to adopt the BAS-based approach developed for small cities. This approach provides flexibility for applicants while resulting in higher-functioning buffers that are sensitive to existing wetland functions. Standard buffer widths for wetlands with low habitat scores will not increase. Applicants are already required to submit a delineation and rating study prepared by a professional wetland scientist; this approach enables the City to use that information to make more prescriptive, site-specific decisions.

2.4 Variation of Standard Wetland Buffer Width (TMC 18.45.080.F)

TMC 18.45.080.F allows for reduction of the standard buffer width up to 50 percent where existing conditions are degraded and where the applicant proposes to enhance the degraded

buffer. However, per Ecology guidance, the BAS-based buffer widths described above "assume that the buffer is vegetated with a native plant community appropriate for the ecoregion. If the existing buffer is unvegetated, sparsely vegetated, or vegetated with invasive species that do not perform needed functions, the buffer should either be planted to create the appropriate plant community or the buffer should be widened to ensure that adequate functions of the buffer are provided" (Ecology 2016). In other words, functioning buffers of the widths listed above are the minimum necessary, per BAS, to protect wetland functions.

Rather than buffer reduction, Ecology guidance recommends buffer averaging to provide flexibility to applicants and accommodate site constraints. Buffer averaging may also be used to improve wetland protection when wetland functions vary spatially. Averaging should be limited to 75 percent of the standard buffer width and should not reduce the total buffer area.

To align with BAS and better protect Tukwila's wetlands, we recommend that the City revise this section to allow buffer averaging rather than reduction, and to limit that averaging to 75 percent of the standard buffer width.

2.5 Alterations (TMC 18.45.090.B)

TMC 18.45.090.B.5 provides an exemption for wetlands under 1,000 square feet with a habitat score under five where they are not associated with a riparian corridor or part of a wetland mosaic, and where they do not contain priority habitat. Per Ecology guidance, this exemption may be extended to isolated Category IV wetlands under 4,000 square feet. Neither exemption should apply to wetlands associated with shorelines of the state.

2.6 Mitigation Standards (TMC 18.45.090.E)

The mitigation standards and ratios presented in TMC 18.45.090.E generally align with BAS. To improve code usability, we recommend that the City add a provision defining the required mitigation ratio for wetland buffer impacts (1:1). To ensure effective mitigation, Ecology further recommends that mitigation areas and associated buffers be located in a sensitive areas tract or conservation easement consistent with TMC 18.45.170.

2.7 Wetland and Buffer Mitigation Location (TMC 18.45.090.F)

The provisions in TMC 18.45.090.F generally align with BAS in establishing preferences for mitigation location, with on-site mitigation as a first preference. While most local jurisdictions prefer that off-site mitigation be located within city boundaries, State and federal resource agencies advocate use of alternative mitigation methods such as mitigation banks, in-lieu-fee programs, or advance mitigation. The City's mitigation bank standards are found in the preceding section, .090.E. We recommend that the City integrate these standards into the preference hierarchy presented in section .090.F to clarify under what circumstances alternative mitigation methods should be used.

3 Watercourses

The City's watercourse regulations should be updated to improve protection and align with current BAS. A summary of code revisions for consideration is provided below (Table 2-1).

Table 2-1. Recommended revisions to watercourses regulations.

Code Section	Title	Review Comment / Recommendations*
18.45.100.A	Watercourse Ratings	• Consider removing reference to Types 1-4 to avoid confusion • Consider defining a process to verify stream conditions
18.45.100.C	Watercourse Buffer Widths	• Update buffer width requirements
18.45.100.E	Variation of Standard Watercourse Buffer Width	• Limit buffer reduction to ensure adequate minimum buffer widths • Consider adding allowance for buffer averaging
18.45.110	Watercourse Alterations and Mitigation	• Consider revising for usability

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

3.1 Watercourse Ratings (TMC 18.45.100.A)

TMC 18.45.100.A defines watercourses according to the Washington State Department of Natural Resources (WDNR) Forest Practices water typing system, consistent with BAS. For each of the four watercourse classes (Types S, F, Np, and Ns), the code assigns a numerical class (Types 1, 2, 3, 4). This numerical system looks similar to, but does not align with, the former WDNR water classification system, which also used numerical classes (Types 1, 2, 3, 4, 5). To avoid confusion, we recommend removing the numerical classification system and either relying directly on WDNR terminology or utilizing a lettering system (e.g. Types A, B, C, D).

Critical area rules in the WAC were amended in January 2017 to recommend that, "Counties and cities that use the stream typing system developed by the department of natural resources should develop a process to verify actual stream conditions, identify flow alterations, and locate fish passage barriers by conducting a field visit. Field verification of all intermittent or nonfish bearing streams should occur during the wet season months of October to March or as determined locally" (WAC 365-190-130(4)(f)(ii)). This requirement could be added to the specific requirements for watercourse sensitive area studies in TMC 18.45.040.B. In incorporating this requirement, other jurisdictions have added a qualifying clause such as "as practicable" to minimize impacts on project applicants.

3.2 Watercourse Buffer Widths (TMC 18.45.100.C)

A wide range of stream buffer widths are recommended by BAS, depending on the target functions and buffer condition. Buffer continuity and vegetative quality are important factors in determining effective buffer widths. Stream buffer requirements under current code are within the range, at the low end of the recommended scale for Type F and Type Ns watercourses.

Table 2-2 below provides a summary of buffer width ranges derived from BAS and other local jurisdictions.

Table 2-2. Buffer ranges by watercourse type per TMC, BAS, and other jurisdictions.

Stream Type	Watercourse Buffer (ft), TMC	Sample Buffer Ranges (ft)
S	Regulated under SMP	115-165
F	100	100-165
Np	80	50-65
Ns	50	50-65

The City completed an analysis of existing watercourse buffers as part of its 2010 SAO update. This analysis found that many buffers are in a degraded condition, with little native vegetation and/or constrained by surrounding infrastructure and development. Where redevelopment occurs in these areas, vegetative enhancement of the buffer can provide an important tool to improving buffer function within an urban environment.

3.3 Variation of Standard Watercourse Buffer Width (TMC 18.45.100.E)

TMC 18.45.100.E currently allows buffer reduction up to 50 percent with buffer enhancement. Based on the functions that different widths of buffers provide, fish bearing streams should remain as close to 100 feet as possible; however, reductions of up to 25 percent with enhancement are likely to provide adequate protection for most small stream channels. Buffers narrower than 33 feet (i.e. a reduced buffer on a Type Ns watercourse) are generally not considered functionally effective (The Watershed Company 2011), and these should not be permitted.

The City could continue to allow flexibility through buffer reduction with enhancement. However, for consistency with the wetland regulations, the City may consider utilizing buffer averaging only. Given that most existing watercourse buffers are degraded, the City should consider requiring buffer enhancement when buffer averaging is allowed.

3.4 Watercourse Alterations and Mitigation (TMC 18.45.110)

The provisions of this section are generally consistent with BAS. We recommend a review of this section for organization, redundancy, and clarity of language. For example, subsection D, Mitigation Standards, uses restoration terminology inconsistent with other sections in the SAO, and there are several duplicative provisions in subsection B, Alterations, addressing fish passable watercourse crossings. The City should also consider updating the reference to the 2003 WDFW culvert design manual to refer instead to the 2013 WDFW "Water Crossing Design Guidelines" manual.

4 Geologically Hazardous Areas

TMC 18.45.120-.130 and 18.45.140 address areas of potential geologic instability (landslides) and abandoned coal mines, respectively. Review of these two sections is presented together under the umbrella of geologically hazardous areas; we recommend that the City consolidate these

two sections under a single section to improve clarity and usability and align with GMA terminology. Our review of the SAO did not include an in-depth review of BAS related to geologically hazardous areas. As such, recommendations are focused on code usability and best practices. Table 3-1 provides a summary of these recommendations for the City's consideration.

Table 3-1. Recommended revisions to geologically hazardous area regulations.

Code Section	Title	Review Comment / Recommendations*
18.45.120-.140	All	• Consider consolidating landslide hazard and abandoned coal mine hazard provisions into a single "geologically hazardous area" section
18.45.120.A	Designation	• Consider adding specific information on mapping sources • Consider designating seismic hazard areas and developing associated protective provisions
18.45.120.C	Buffer Widths	• Consider defining a default buffer in the absence of a geotechnical report
18.45.130.C	Alterations	• Consider adding specific protective provisions

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

4.1 Designation (TMC 18.45.120.A)

TMC 18.45.120.A designates four classes of potential geologic instability, with increasing hazard from classes one to four. Classes are defined by slope, soil characteristics, historic landslides, and/or hydrology. While the City's Sensitive Areas Map depicts these areas, neither the map nor the code refer to public sources of mapping information. We recommend that the City revise the designation section or add a mapping section (similar to the approach for fish and wildlife habitat conservation areas) to include this information. Potential sources of mapping information include:

- For historic landslides, areas designated as quaternary slumps, earthflows, mudflows, or landslides on maps published by the U.S. Geological Survey or the WDNR Division of Geology and Earth Resources;
- For potential or historic landslides, those areas mapped by the WDNR (slope stability mapping) as unstable (U or class 3), unstable old slides (UOS or class 4), or unstable recent slides (URS or class 5);
- For soil characteristics, the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Official Soil Survey Data; and
- For general instability, those areas mapped by the NRCS as having a significant limitation for building site development.

The City does not currently designate areas of erosion hazard or seismic hazard. Per WAC 365-190-120(5), "Erosion hazard areas include areas likely to become unstable, such as bluffs, steep slopes, and areas with unconsolidated soils." Erosion hazard areas also include channel migration zones. The City's existing designation of areas of potential geologic instability partially overlap with the WAC definition. We recommend that the City expand this designation to include erosion hazard areas, identifying such areas using the NRCS Official Soil

Survey Data where soils are characterized as having a "severe" or "very severe" erosion hazard based on slope and soil erosion factor K. A preliminary review of the NRCS data shows areas of severe erosion hazard occurring in the city between Southcenter and Interstate 5.

TMC 18.45.030.B states, "Areas of seismic instability are defined and regulated through the Washington State Building Code." While the City may wish to continue deferring to the State for regulation of these areas, we recommend clarifying how and where such areas are designated in the City. Per WAC 365-190-120(7), "Seismic hazard areas must include areas subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement or subsidence, soil liquefaction, surface faulting, or tsunamis." WDNR maps the risk of damage as a result of soil-amplified earthquake-induced ground shaking, or site class, on a countywide basis. It also maps liquefaction susceptibility. Within the city, the WDNR maps show broad areas of moderate to high liquefaction susceptibility on either side of the Duwamish/Green and throughout Southcenter. These areas generally coincide with areas of moderate to severe amplification of ground shaking. Both of these factors are derived from underlying soil characteristics (Palmer et al. 2004). The City should consider evaluating these resources for relevance to new sensitive area designations in Tukwila.

4.2 Buffer Widths (TMC 18.45.120.C)

TMC 18.45.130.C requires that a geotechnical support be submitted, in which the need for and width of any buffers or setbacks be specified. Consistent with BAS and in accordance with the precautionary principle, we recommend that the City define a default or standard buffer of 50 feet from all sides of Class 2 or higher areas of potential geologic instability. Reduction or elimination of this buffer may be justified through the required geotechnical report. This approach clearly conveys the City's intent to protect these sensitive areas as well as property and human safety, and ensures a default level of protection while enabling the applicant's hired geotechnical engineer to justify relief from this requirement on behalf of his or her client.

4.3 Alterations (TMC 18.45.130.C)

The existing provisions in TMC 18.45.130.C require that an applicant, through submittal of a geotechnical report, demonstrate that the proposed project is compatible with the areas of potential geologic instability present on-site. These provisions provide a catch-all and place the onus on the geotechnical consultant to recommend any project conditions necessary to achieve that compatibility and ensure the safety of the project. To improve clarity for the applicant and inform/facilitate permit review for City staff, we recommend expanding this code section to include more specific protective provisions. Potential provisions include:

- Requiring that critical facilities be sited outside of, and not below, potential areas of geologic instability unless there is no practical alternative, as demonstrated by the applicant;

- Requiring that land disturbing activities provide for stormwater quality and quantity control, including preparation of a TESC and permanent drainage plan prepared by a professional engineer;
- Prohibiting removal of vegetation from areas of potential geologic instability and their buffers unless permitted as part of an approved alteration, in which case it should be minimized to the extent practicable;
- Requiring that surface drainage, including downspouts, not be directed across the face of areas of potential geologic instability;
- Requiring that proposed activities minimize the amount of grading and filling to the amount necessary; and
- Requiring that the proposed alteration not result in greater risk or increased buffers on neighboring properties.

5 Fish and Wildlife Habitat Conservation Areas

The City's fish and wildlife habitat conservation area regulations should be updated to improve protection and align with current BAS. To better align with GMA definitions, we recommend that these regulations be combined with the SAO sections on watercourses, discussed in Section 2, above. A summary of code revisions for consideration is provided below (Table 4-1).

Table 4-1. Recommended revisions to fish and wildlife habitat conservation area regulations.

Code Section	Title	Review Comment / Recommendations*
18.45.150	All	• Consider combining with 18.45.100, Watercourses, per GMA definition
18.45.150.A	Designation	• Revise to align with GMA list • Incorporate relevant language from 18.45.150.B, Mapping • Consider defining process of designation of habitats of local importance
18.45.150.B	Mapping	• Consider revising language to be more specific
18.45.150.C	Buffers	• Add requirement for site-specific buffers based on analysis by qualified professional
18.45.150.D	Uses and Standards	• Add requirement for habitat assessment

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

5.1 Designation (TMC 18.45.150.A)

The GMA list of designated fish and wildlife habitat conservation areas was amended in January 2017 to include (WAC 365-190-130(2):

(a) Areas where endangered, threatened, and sensitive species have a primary association;
(b) Habitats and species of local importance, as determined locally;
(c) Commercial and recreational shellfish areas;
(d) Kelp and eelgrass beds; herring, smelt, and other forage fish spawning areas;

(e) Naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish or wildlife habitat;
(f) Waters of the state;
(g) Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity; and
(h) State natural area preserves, natural resource conservation areas, and state wildlife areas.

The City's list is generally consistent with the WAC and needs only minimal revisions and reorganization. We recommend that the City clarify those priority habitats and species that have been designated locally, including mudflats and marshes and areas critical for habitat connectivity as well as eagle habitat and heron rookeries (currently TMC 18.45.150.A.2, .5, and .9).

The subsequent section, Mapping, contains language that provides additional information about these designated areas, referring to specific features within the city (TMC 18.45.150.B.1 and .2). We recommend that this information be relocated into TMC 18.45.150.A, Designation.

Finally, the City should consider codifying the process used to identify and designate habitats and species of local importance.

5.2 Mapping (TMC 18.45.150.B)

TMC 18.45.150.B.2 lists sources of maps and data to guide the City with respect to the location of fish and habitat conservation areas. Additional sources for consideration include:

- Washington Department of Fish and Wildlife (WDFW) Salmonscape maps
- WDNR water type maps
- U.S. Fish and Wildlife Service Information for Planning and Conservation Maps
- U.S. Fish and Wildlife Service and National Marine Fisheries Service Critical Habitat Maps

5.3 Buffers (TMC 18.45.150.C)

While this section defines a default buffer of 100 feet, it does not identify how an applicant should determine whether a site-specific buffer width is necessary and what that buffer width may be. Consistent with the City's approach for geologically hazardous areas, we recommend that this section be amended to require that buffers be based on site-specific conditions; management recommendations provided by the WDFW Priority Habitats and Species Program, if applicable (see below); and the recommendation of a qualified professional in a sensitive area special study.

5.4 Uses and Standards (TMC 18.45.150.D)

A requirement for a habitat assessment prepared by a qualified professional should be added to this subsection, or to TMC 18.45.040, Sensitive Area Special Studies, to better reflect BAS. To align with BAS, the habitat assessment should include a discussion of any federal, state, or local special management recommendations, including WDFW habitat management

recommendations, that have been developed for species or habitats located on or adjacent to the project area, and a description of how the project employs those recommendations. The habitat assessment should also include a detailed discussion of the direct and indirect potential impacts on habitat by the project, including both site-specific and landscape-scale impacts as well as impacts to water quality. At the local scale, factors such as habitat structure and composition, species features, recruitment opportunity for snags and large woody debris, and water should be managed for wildlife at present and in the future. Landscape-scale features requiring consideration in land use planning include patch size and juxtaposition, edge, corridors and fragmentation, and proximity of other sensitive areas.

6 Frequently Flooded Areas

Frequently flooded areas in the City of Tukwila are regulated under TMC Chapter 16.52, Flood Plain Management. The purpose of this chapter is to minimize public and private losses due to flood conditions; it applies to special flood hazard areas in the city, as identified by the Federal Emergency Management Agency (FEMA) in Flood Insurance Rate Maps. BAS-recommended changes to this chapter are discussed below and summarized in Table 5-1.

Table 5-1. Recommended revisions to frequently flooded area regulations.

Code Section	Title	Review Comment / Recommendations*
18.45	Applicability	• Consider adding a subsection to Chapter 18.45 to address GMA-specific requirements in frequently flooded areas • Determine preferred method for compliance with FEMA BiOp

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

The GMA recognizes that, in addition to flood hazard, frequently flooded areas also provide important hydrological functions and vital salmon habitat. The 2008 FEMA *National Marine Fisheries Service Biological Opinion* (FEMA BiOp) (NMFS 2008) found that implementation of the National Flood Insurance Program (NFIP) in the Puget Sound region jeopardizes the continued existence of federally threatened salmonids and resident killer whales. As a result, NMFS established Reasonable and Prudent Alternatives to ensure that development within special flood hazard areas (100 year floodplain), floodway, channel migration zone, and riparian buffer zone do not adversely affect water quality, water quantity, flood volumes, flood velocities, spawning substrate, or floodplain refugia for listed salmonids. The City's flood regulations must adhere to the FEMA BiOp through application of these Reasonable and Prudent Alternatives to prevent and/or minimize the degradation of channel and floodplain habitat (Ecology 2015). Specifically, the FEMA BiOp requires changes to implementation of the National Flood Insurance Program (NFIP) in order to meet the requirements of the Endangered Species Act (ESA) in the Puget Sound watershed. Because the NFIP is implemented by FEMA through participation by local jurisdictions that adopt and enforce floodplain management ordinances, FEMA has delegated responsibility to the local jurisdictions to ensure that development does not adversely affect listed species.

To comply with the requirements of the FEMA BiOp, the City has three options, or "doors:"

1. Adopt the model ordinance developed by FEMA (FEMA 2010);
2. Develop floodplain regulations that protect floodplain functions on a programmatic basis; or
3. Require the completion of a floodplain habitat assessment for any development within the floodplain. Habitat assessments must evaluate impacts to stormwater, floodplain capacity, and vegetative habitat.

Unless the City adopts the model ordinance or develops customized floodplain regulations that are reviewed and approved by FEMA, the third option, "Door 3," is the default requirement. The first option, the model ordinance, would most likely represent the most conservative approach to protecting floodplain functions, but it would also be expected to be the most restrictive option in terms of future development and provide the least flexibility in implementation. The second option allows local jurisdictions to establish regulations that recognize local conditions and may incorporate programs that enhance floodplain functions into the evaluation of how floodplain functions are maintained. However, FEMA must approve any "Door 2" approach before it is implemented through the submittal and review of a programmatic checklist. "Door 3" is the most common approach taken by local jurisdictions.

Ecology also recommends applying standards more stringent than the minimum FEMA-required protections. For example, minimum elevation of new structures should be at least two or three feet above the Base Flood Elevation (BFE), instead of just one foot.

In incorporating these new requirements, the City should consider adding a section to the SAO specific to frequently flooded areas. The section would designate these areas pursuant to the GMA, define requirements associated with the FEMA BiOp, and refer to TMC Chapter 16.52 for all other regulations in frequently flooded areas.

7 General Protective Provisions

Protective provisions broadly applicable to all sensitive areas are found in sections 18.45.020 through 18.45.070 and 18.45.160 through 18.45.170 TMC. General recommendations for revisions or additions to these sections are discussed below and summarized in Table 6-1.

Table 6-1. Recommended revisions to general protective provisions.

Code Section	Topic	Review Comment / Recommendations*
18.45.030, 18.45.040, 18.06.018	Applicability	• Consider clarifying applicability by defining adjacency according to maximum potential buffer widths
18.45	Setbacks	• Require setbacks from all applicable sensitive areas
18.45	Mitigation sequencing	• Require mitigation sequencing for all sensitive areas
18.06	Definitions	• Review and update per BAS

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

7.1 Applicability (TMC 18.45.030)

Sections 18.45.030 and 18.45.040 TMC indicate that SAO requirements apply where sensitive areas exist on or adjacent to an applicant's property. The definition of "adjacent" in section 18.06.018 TMC states, "'Adjacent' means lying near or close to; sometimes, contiguous; neighboring. Adjacent implies that the two objects are not widely separated, though they many not actually touch."

In implementation, a subjective or non-specific definition of adjacency can lead to uncertainty regarding SAO applicability. For example, an applicant with knowledge of a wetland on the far side of a neighboring property may not know whether a project on his or her own property will be subject to SAO requirements. We recommend that the City revise the current definition of "adjacent" to clearly define a distance to the edge of each type of sensitive area based on the maximum potential buffer. For example, under the current wetland buffer regulations, the aforementioned applicant would not be subject to SAO requirements if the neighbor's wetland is more than 100 feet away.

7.2 Setbacks (various)

In the existing SAO, setbacks are required from wetland buffers (TMC 18.45.080.E) and watercourse buffers (TMC 18.45.100.D). Building setbacks provide access for maintenance and should apply to all sensitive areas, with the possible exception of seismic hazard areas. Setbacks 10 to 15 feet wide are adequate. We recommend that the City add a general requirement for building setbacks from all sensitive area buffers or, where no buffers are required, from sensitive area edges.

7.3 Mitigation sequencing (various)

Demonstration of mitigation sequencing is a required component of wetland and watercourse sensitive area studies (TMC 18.45.040.B). A definition of mitigation sequencing is provided in the wetlands section (TMC 18.45.090.C). Mitigation sequencing is a critical component of sensitive areas protection, helping to ensure that adverse impacts permitted under the SAO are the minimum necessary, and that those impacts will be compensated for. We recommend that the City develop a general mitigation section, clarifying that mitigation is broadly required in all sensitive areas and defining the mitigation sequencing process.

7.4 Definitions (TMC 18.06)

In association with the revisions recommended by this gap analysis, the City should review and revise the definitions in Chapter 18.06 TMC relevant to the SAO to better align with BAS.

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