



City of Castle Rock Critical Areas Ordinance Manual

Standard Specifications & Drawings

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General Requirements

- A. The scope, content, and format of all critical areas reports shall be subject to City review and approval, and should include:
1. The name and contact information of the Property Owner, Project Sponsor, and Applicant;
 2. The names and professional qualifications of the persons that prepared the report and supporting documents, including their experience in proposing and implementing mitigation plans for the associated type of critical areas relevant to the proposed project;
 3. A description of the proposed action and the required permits and approvals, including:
 - a. Measures taken in the design of the proposed action to avoid or minimize potential adverse impacts;
 - b. Proposed construction sequencing, timing, and duration; and
 - c. A description of the proposed stormwater management plan, if applicable, including temporary erosion control measures.
 4. A site plan for the proposed development, drawn to scale with dimensions, showing:
 - a. The boundaries of the site and adjoining parcels;
 - b. The location of all critical areas and buffers on and near the site;
 - c. Existing natural and man-made features on the site, including existing buildings, disturbed areas, utilities, and easements; and
 - d. Areas proposed for development including clearing and grading.
 5. A technical analysis of all critical all critical areas and buffers on or adjacent to the site, including:
 - a. Documentation of the location of critical areas and their buffers;
 - b. A characterization of the critical areas including classifications and an assessment of their function and values;
 - c. A statement specifying the assumptions made and relied upon;
 - d. A discussion of the performance standards applicable to the critical area and the proposed activity based on Best Available science;
 - e. An assessment of the potential impacts to the critical areas and buffers that may result from proposed development;

- f. An analysis of site development alternatives; and
 - g. Recommended measures to further avoid or minimize potential adverse impacts, such as limitations on the dates or times of construction activities.
6. A recommended Mitigation Plan based on Best Available Science. This should include, but is not limited to:
- a. A complete description of the recommended mitigating measures, including on-site and off-site measures;
 - b. Proposed buffers and setbacks and limitations on development activities in these areas;
 - c. Buffer averaging;
 - d. Monitoring protocols;
 - e. Proposed maintenance activities; and
 - f. Proposed financial guarantees or other measures to ensure the performance or recommended mitigating measures.

Wetlands

Guidelines for Preparing Wetlands Reports

A Critical Area Authorization or Permit is required before any construction or development activity may be initiated on a site with areas meeting the criteria for designations as a wetland or an associated buffer, in accordance with the provisions of Castle Rock Municipal Code Chapter 18.10.020.

1. A Critical Area Authorization shall be issued based on a finding that the proposed activity is exempt, or that City has adequate information to determine that the proposal will not have an adverse impact on Critical Areas, and otherwise complies with the provisions of Chapter 18.10.020 and Chapter 18.10.070.
2. A Critical Area Permit shall be based on the findings and recommendations contained in a Wetland Report.

In addition to the minimum required contents of critical area reports, a critical area report for wetlands shall contain an analysis of the wetlands including the following site- and proposal-related information at a minimum:

1. A written assessment and accompanying maps of the wetlands and buffers within 200 feet of the project area, including the following information at a minimum:
 - a. Wetland rating, wetland delineation and required buffers;
 - b. Existing wetland acreage;
 - c. Wetland category; vegetative, faunal, and hydrologic characteristics;
 - d. Soil and substrate conditions;
 - e. Topographic elevations, at two-foot contours; and
 - f. A discussion of the water sources supplying the wetland and documentation of hydrologic regime (locations of inlet and outlet features, water depths throughout the wetland, evidence of recharge or discharge, evidence of water depths throughout the year — drift lines, algal layers, moss lines, and sediment deposits).
2. A discussion of measures, including avoidance, minimization, and mitigation, proposed to protect existing wetlands within the project area.
3. Functional evaluation for the wetland and buffer within the project area using a local or state agency recognized method and including the reference of the method and all data sheets.
4. Proposed mitigation, if needed, including a written assessment, and accompanying maps of the mitigation area, including the following information at a minimum:

- a. Existing wetland acreage and proposed impact area;
 - b. Vegetative, faunal, and hydrologic conditions;
 - c. Relationship within watershed and to existing water bodies;
 - d. Soil and substrate conditions, topographic elevations;
 - e. Existing and proposed adjacent site conditions;
 - f. Required wetland buffers; and
 - g. Property ownership.
5. A discussion of ongoing management practices that will protect wetlands after the project site has been developed, including proposed monitoring and maintenance programs.

Standards for Classifying and Protecting Wetlands

- A. Wetlands in the City of Castle Rock are rated according to the Washington Department of Ecology wetland rating system, as set forth in the Washington State Wetland Rating System for Eastern Washington: 2014 Update (Ecology Publication #14-06-030, October 2014), or as revised. The descriptions of wetland categories according to the Rating System are generally as follows:
1. Category I Wetlands include alkali wetlands, wetlands that are identified by scientists of the Washington Natural Heritage Program (DNR) as wetlands with high conservation value, bogs, mature old-growth forested wetlands over one-quarter acre with slow-growing trees, forests with stands of aspen, and wetlands that perform many functions very well function at a very high level (scores twenty-two to twenty-seven points). They meet at least one of the following criteria: (a) represent a unique or rare wetland type; or (b) are more sensitive to disturbance than most wetlands; or (c) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; (d) provide a high level of functions (scores of 22 or more points using the Eastside rating system); or (e) are documented wetlands of local significance. Generally, these wetlands are not common and make up a small percentage of the wetlands in the region.
 2. Category II wetlands provide high levels of some functions (scores between 19 and 21 points). These wetlands occur more commonly than Category I wetlands, but still need a relatively high level of protection.
 3. Category III wetlands are 1) vernal pools that are isolated, and 2) wetlands with a moderate level of functions (scores between 16 and 18 points). Wetlands scoring between 16 and 18 points generally have been disturbed in some ways, and are often smaller, less diverse and/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 16 points) and are often heavily disturbed. These wetlands may provide some important functions and also need protection.
- B. A buffer area shall be established for all designated wetlands to protect the function and values of the wetland. The criteria and standards for establishing buffer areas can be found in this manual and references standards as adopted by reference in the Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10 Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Version 1), Ecology Publication #06-06-011b, Olympia, WA, March 2006 or as revised, Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1). Washington State Department of Ecology Publication #06-06-011a. Olympia, Washington. Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans--Version 1, (Ecology Publication #06-06-011b, Olympia, WA, March 2006 or as revised), and Selecting

Wetland Mitigation Sites Using a Watershed Approach (Western Washington) (Publication #10-06-07, November 2010)., or as subsequently amended.

1. The standard buffer widths are based on wetland category, intensity of impacts, and wetland functions or special characteristics. The buffer is to be vegetated with native plant communities that are appropriate for the site conditions. If vegetation in the buffer is disturbed (grazed or mowed), applicants planning changes to land that will increase impacts to wetlands need to rehabilitate the buffer with native plant communities that are appropriate for the site conditions. The width of the buffer is measured in horizontal distance.
 2. All buffers shall be measured from the wetland boundary as surveyed in the field. The width of the wetland buffer shall be determined according to the wetland category and the proposed land use.
 3. Buffers shall not include areas that are functionally and effectively disconnected from the wetland by a road or other substantially developed surface of sufficient width and with use characteristics such that buffer functions are not provided.
- C. Wetland buffer widths may be modified on a case-by-case basis by averaging buffer widths, based on a Wetland Report that demonstrates to the satisfaction of the City, that the following criteria can be met:
1. Buffer width averaging shall be allowed only where:
 - a. The wetland has significant differences in characteristics that affect its habitat functions, such as a wetland with a forested component adjacent to a degraded emergent component or a “dual-rated” wetland with a Category I area adjacent to a lower-rated area.
 - b. The buffer is increased adjacent to the higher-functioning area of habitat or more sensitive portion of the wetland and decreased adjacent to the lower-functioning or less sensitive portion.
 - c. The total area of the buffer after averaging is equal to the area required without averaging and all increases in buffer dimension for averaging are generally parallel to the wetland edge.
 - d. The buffer at its narrowest point is never less than seventy-five percent of the required width.
 2. Averaging to allow reasonable use of a parcel may be permitted when all of the following are met:
 - a. There are no feasible alternatives to the site design that could be accomplished without buffer averaging.

- b. The averaged buffer will not result in degradation of the wetland's functions and values.
 - c. The total buffer area after averaging is equal to the area required without averaging and all increases in buffer dimension for averaging are generally parallel to the wetland edge.
- D. The buffer at its narrowest point is never less than three-quarters of the required width except where the director finds that there is an existing feature such as a roadway that limits buffer dimension, or an essential element of a proposed development such as access that must be accommodated for reasonable use and requires a smaller buffer.
- E. The applicant implements all reasonable measures to reduce the adverse effects of adjacent land uses and ensure no net loss of wetland functions and values in conjunction with a wetland assessment study and mitigation plan.
- H. The City may increase the width of the standard buffer on a case-by-case basis, based on a critical area report, when a larger buffer is required to protect critical habitats, or such increase is necessary to:
- 1. Protect the function and value of the wetland from proximity impacts of adjacent land use, including noise, light, and other disturbance, not sufficiently limited by buffers provided above;
 - 2. Maintain viable populations of native priority species of fish and wildlife; or
 - 3. Protect wetlands or other critical areas from landslides, erosion, or other hazards.
 - 4. Buffer requirements will be based on the studies provided identifying the specific type of wetland.
- I. The width of a wetland buffer may be increased or decreased by the City on a case-by-case basis based on approval of a wetland report that documents that a larger buffer is needed to protect wetland functions or values or that a smaller buffer adequately protects wetlands without a net loss of functions or values.
- 1. The standard buffer widths identified 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. The proponent shall maintain the viability of the buffer in perpetuity as specified in the wetland report.
 - 2. Wetland buffers may be reduced by no more than 25% of the standard buffer width.

3. The applicant implements all reasonable measures to reduce the adverse effects of adjacent land uses and ensure no net loss of buffer functions and values. The specific measures that shall be implemented include:
 - a. Direct lights away from the wetland and buffer.
 - b. Locate facilities that generate substantial noise (such as some manufacturing, industrial and recreational facilities) away from the wetland and buffer.
 - c. Establish covenants limiting use of pesticides to outside the established buffer area of the wetland.
 - d. Implement integrated pest management programs.
 - e. Infiltrate or treat, detain, and disperse runoff into buffer.
 - f. Post signs at the outer edge of the critical area or buffer to clearly indicate the location of the critical area.
 - g. Plant buffer with native vegetation appropriate for the region to create screens or barriers to noise, light, human intrusion and discourage domestic animal intrusion.
 - h. Use low impact development if possible where appropriate.
 - i. Establish a permanent conservation easement to protect the wetland and the associated buffer.

Table 1: Land Use Level of Impact

Land Use Intensity	Proposed Land Use Types*
Low	• Timber management activities, including harvesting, thinning, brush and weed control, and control efforts for fire, insects, and disease
	• Low-intensity open space (hiking, bird-watching, preservation of natural resources, etc.)
	• Unpaved trails
	• Utility corridor without a maintenance road and little or no vegetation management
Moderate	• Residential (one unit/acre or less)
	• Moderate intensity open space (parks with biking, jogging, etc.)
	• Paved trails
	• Building of logging roads
High	• Excavation of driveways
	• Utility corridor or right-of-way shared by several utilities and including access/maintenance road
	• Commercial, urban, industrial, institutional, and retail sales

	• Residential development and residential subdivisions (more than one unit/acre)
	• High intensity recreation (golf courses, ball fields, etc.)
	• Minor transportation improvements

*The above list of land use types are examples and not an exhaustive list; other similar uses may be included in each category at the discretion of the Director. *Source: Cowlitz County Code Section 19.15.120 Wetlands*

Table 1: Cowlitz County Mitigation Ratios

Wetland Category	Creation	Re-establishment- Rehabilitation Only	Creation and Rehabilitation	Creation and Enhancement	Enhancement Only
Category I: based on total functions	4:1	8:1	1:1 C and 6:1 RH	1:1 C and 12:1 E	16:1 E
Category I: Bog	Not possible	6:1 RH of a bog	Not possible	Not possible	Case-by-case
Category I: Forested	6:1	12:1	1:1 C and 10:1 RH	1:1 C and 20:1 E	24:1
Category II	3:1	6:1	1:1 C and 4:1 RH	1:1 C and 8:1 E	12:1
Category III	2:1	4:1	1:1 C and 2:1 RH	1:1 C and 4:1 E	8:1
Category IV	1.5:1	3:1	1:1 C and 1:1 RH	1:1 C and 2:1 E	6:1

**This document, Appendix 8-C of Wetlands in Washington State, Volume 2 – Protecting and Managing Wetlands (Granger et al. 2005). *Source: Cowlitz County Critical Areas Best Available Science Review (Table 4-2-2)*

Legend: C = Creation, RH = Rehabilitation, E = Enhancement

Table 3: Buffers Required to Protect Water Quality Functions

Wetland Rating	Low Intensity Use	Moderate Intensity Use	High Intensity Use
Category I	50 ft.	75 ft.	100 ft.
Category II	50 ft.	75 ft.	100 ft.
Category III	40 ft.	60 ft.	80 ft.
Category IV	25 ft.	40 ft.	50 ft.

Buffer widths in Table 3 apply to all Category IV wetlands regardless of habitat score and all other wetlands with habitat scores of three to four points on the rating form. *Source: Cowlitz County Code Section 19.15.120 Wetlands*

Table 4: Buffers Required to Protect Habitat Functions

Habitat Score in the Rating Form	Low Intensity Use	Moderate Intensity Use	High Intensity Use
Category I Bogs			
Not Applicable	125 ft.	190 ft.	250 ft.
Category I or II Wetlands			
5 points	60 ft.	90 ft.	120 ft.
6 points	90 ft.	130 ft.	180 ft.
7 points	130 ft.	195 ft.	260 ft.
8-9 points	150 ft.	225 ft.	300 ft.
Category III Wetlands			
5 points	60 ft.	90 ft.	120 ft.
6 points or greater	75 ft.	110 ft.	150 ft.

Source: Cowlitz County Code Section 19.15.120 Wetlands

Table 5: Required Measures to Minimize Impacts to Wetlands

Examples of Disturbance	Activities and Uses That Cause Disturbances	Examples of Measures to Minimize Impacts
Lights	<ul style="list-style-type: none"> • Parking lots • Warehouses • Manufacturing • Residential 	<ul style="list-style-type: none"> • Direct lights away from wetland
Noise	<ul style="list-style-type: none"> • Manufacturing • Residential 	<ul style="list-style-type: none"> • Locate activity that generates noise away from wetland
Toxic runoff*	<ul style="list-style-type: none"> • Parking lots • Roads • Manufacturing • Residential areas • Application of agricultural pesticides • Landscaping 	<ul style="list-style-type: none"> • Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered • Establish covenants limiting use of pesticides within 150 ft. of wetland • Apply integrated pest management
Stormwater runoff	<ul style="list-style-type: none"> • Parking lots • Roads • Manufacturing • Residential areas • Commercial • Landscaping 	<ul style="list-style-type: none"> • Retrofit stormwater detention and treatment for roads and existing adjacent development • Prevent channelized flow from lawns that directly enters the buffer • Use low intensity development techniques
Change in water regime	<ul style="list-style-type: none"> • Impermeable surface • Lawns • Tilling 	<ul style="list-style-type: none"> • Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns
Pets and human disturbance	<ul style="list-style-type: none"> • Residential areas 	<ul style="list-style-type: none"> • Use privacy fencing • Plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion

		<ul style="list-style-type: none"> Place wetland and its buffer in a separate tract or protect with a conservation easement
Dust	<ul style="list-style-type: none"> Tilled fields 	<ul style="list-style-type: none"> Use best management practices to control dust

*These examples are not necessarily adequate for minimizing toxic runoff if threatened or endangered species are present at the site. *Source: Cowlitz County Code Section 19.15.120 Wetlands*

B. Proposed development activities or uses that may have an adverse impact on wetlands may be required to provide compensatory mitigation, in accordance with the findings and recommendations of a Wetlands Report, as determined by the City.

Mitigation Standards. When the acreage required for compensatory mitigation is divided by the acreage of impact, the result is a number known variously as a replacement, compensation, or mitigation ratio. Compensatory mitigation ratios are used to help ensure that compensatory mitigation actions are adequate to offset unavoidable wetland impacts by requiring a greater amount of mitigation area than the area of impact. Requiring greater mitigation area helps compensate for the risk that a mitigation action will fail and for the time lag that occurs between the wetland impact and achieving a fully functioning mitigation site.

1. The ratios presented are based on the type of compensatory mitigation proposed (e.g., restoration, creation, and enhancement). In its Regulatory Guidance Letter 02-02, the U.S. Army Corps of Engineers provided definitions for these types of compensatory mitigation. For consistency, the authors of this document use the same definitions which are provided under Compensatory Mitigation in Section 18.10. Off-site compensatory mitigation may be required in cases where there are no corresponding opportunities on the project site to replace in-kind elements of a wetland that have been adversely affected as a result of a regulated activity. Such mitigation shall conform to provisions of this manual and Castle Rock Code Sections 18.10.
2. The City may adjust these ratios when a combination of mitigation approaches is proposed. In such cases, the area of altered wetland shall be replaced at a one to one ratio through re-establishment or creations, and the remainder of the area needed to meet the ratio can be replaced by enhancement at a two to one ratio. For example; impacts to one acre of a Category II wetland requiring a three to one ratio for creation can be compensated by creating one acre and enhancing four acres (instead of the additional two acres of creation that would otherwise be required).
 - a. These ratios are based on the assumption that the rehabilitation or enhancement actions implemented represent the average degree of improvement possible for the site. Proposals to implement more effective rehabilitation or enhancement actions may result in a lower ratio, while less effective actions may result in a higher ratio. The distinction between rehabilitation and enhancement is not clear-cut. Instead, rehabilitation and enhancement actions span a continuum. Proposals that fall within the gray area between rehabilitation and enhancement will result in a ratio that lies between the ratios for rehabilitation and the ratios for enhancement.

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

Reference: U. S. Army Corps of Engineers publication Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (WMVCR), Regional Supplement to the 1987 Wetland Delineation Manual (Corps Publication # ERDC/ EL TR-10-03).

3. Mitigation provisions shall have adequate buffers to ensure wetland protection and sustainability. The buffer shall be based on the category and land-use intensity in Section 18.10.340C; provided, that the director may approve a smaller buffer when existing site constraints (such as a road) prohibit attainment of the standard buffer.
 4. Mitigation Maintenance and Monitoring. Annual mitigation maintenance and monitoring reports shall include:
 - a. Descriptive data for vegetation, soils, and hydrology.
 - b. Itemized list of replaced vegetation.
 - c. Quantitative assessment of invasive species.
 - d. Descriptive photographs.
 - e. Statement of overall success of mitigation.
 - f. Schedule of activities for the next year of maintenance and monitoring.
- L. In addition to meeting the requirements of Chapter 18 of Castle Rock Municipal Code, a mitigation plan for wetland and wetland buffer impacts shall meet the following requirements:
1. The plan shall be based on applicable portions of the Washington State Department of Ecology's Wetland Mitigation in Washington State Part 2: Developing Mitigation Plans, 2006, as amended, or other appropriate guidance document that is consistent with best available science.
 2. The plan shall contain sufficient information to demonstrate that the proposed activities are logistically feasible, constructible, ecologically sustainable, and likely to succeed. Specific information to be provided in the plan shall include:
 - a. General description and scaled drawings of the activities proposed including clearing, grading/excavation, drainage alterations, planting, invasive plant management, installation of habitat structures, irrigation, and other site treatments associated with the development activities and proposed mitigation action(s);

- b. A description of the ecological functions and values that the proposed alteration will affect and the specific ecological functions and values the proposed mitigation area(s) shall provide, and an assessment of factors that may affect the success of the mitigation program;
 - c. Overall goals of the plan, including wetland function, value, and acreage;
 - d. Description of baseline (existing) site conditions including topography, vegetation, soils, hydrology, habitat features (i.e., snags), surrounding land use, and other pertinent information;
 - e. Field data confirming the presence of adequate hydrology (surface and/or groundwater) to support existing and compensatory wetland area(s);
 - f. Nature of mitigation activities, including area of restored, created, enhanced and protected wetland, by wetland type;
 - g. Detailed grading and planting plans showing proposed post-construction topography; general hydrologic patterns; spacing and distribution of plant species, size and type of proposed planting stock, watering or irrigation plans, and other pertinent information;
 - h. A description of site treatment measures including invasive species removal, use of mulch and fertilizer, placement of erosion and sediment control devices, and best management practices that will be used to protect existing wetlands and desirable vegetation;
3. Specific measurable performance standards that the proposed mitigation action(s) shall achieve, together with a description of how the mitigation action(s) will be evaluated and monitored to determine if the performance standards are being met; and identification of potential courses of action, and any corrective measures to be taken if monitoring or evaluation indicates that project performance standards are not being met. The performance standards shall be tied to and directly related to the mitigation goals and objectives.
 4. Cost estimates for the installation of the mitigation program, monitoring, and potential corrective actions if project performance standards are not being met.
 5. Mitigation activities shall be timed to occur in the appropriate season based on weather and moisture conditions and shall occur as soon as possible after the permitted alteration.

M. Wetland Mitigation Banks.

1. Credits from a wetland mitigation bank may be approved for use as compensation for unavoidable impacts to wetlands when:
 - a. The bank is certified under Chapter 173-700 WAC;
 - b. The City determines that the wetland mitigation bank provides appropriate compensation for the authorized impacts; and

- c. The proposed use of credits is consistent with the terms and conditions of the bank's certification.
 2. Replacement ratios for projects using bank credits shall be consistent with replacement ratios specified in the bank's certification.
 3. Credits from a certified wetland mitigation bank may be used to compensate for impacts located within the service area specified in the bank's certification. In some cases, bank service areas may include portions of more than one adjacent drainage basin for specific wetland functions.
- C. The following uses and activities may be permitted within a wetland buffer in accordance with the review procedures of this chapter; provided they are not prohibited by any other applicable law and they are conducted in a manner to minimize impacts to the buffer and adjacent wetland:
 1. Passive recreation facilities designed in accordance with the findings and recommendations of a Wetlands Report, including:
 - a. Walkways and trails that are made of pervious materials and require no excavation for foundation or stabilization, provided that those pathways that are generally parallel to the perimeter of the wetland shall be located in the outer 25 percent of the buffer area, and shall be limited to six feet from shoulder to shoulder in width, unless a greater width is approved by the City;
 - b. Wildlife viewing structures that are temporary in nature or not built with permanent foundations; and
 - c. Fishing areas accessed by foot.
 3. Stormwater management facilities are not allowed in buffers of Category I wetlands. Stormwater management facilities, limited to stormwater dispersion outfalls and bioswales, may be allowed within the outer 25 percent of the buffer of Category II, III or IV wetlands only, provided that:
 - a. No other location is feasible; and
 - b. The location of such facilities will not degrade the functions or values of the wetland.
 4. The subdivision and short subdivision of land in wetlands and associated buffers is subject to the following:
 - a. A wetland or its buffer may not be subdivided.
 - b. Land that is located partially within a wetland or its buffer may be subdivided provided that the buildable portion of each lot meets the minimum lot size requirements.
 - c. Access roads and utilities serving the proposed subdivision may be permitted within the wetland and associated buffers only if, based on the associated critical area report, the

City determines that no other feasible alternative exists. Mitigation requirements outlined in Castle Rock Municipal Code Chapter 18.10 Critical Areas to these roads.

5. On-site sewage disposal system conventional drainfields may be permitted in the outer 25 percent of a Category II, III and IV wetland buffer when accessory to an approved residential structure, if the following conditions are met:
 - a. It is not feasible to connect to a public sanitary sewer system;
 - b. There is no reasonable location outside the wetland buffer based on analysis of conditions within the contiguous property owned by the applicant;
 - c. The facility is located as far from the wetland edge as possible and is designed and constructed in a manner that minimizes disturbance of soils and vegetation, and no trees in excess of four inches in diameter are removed or disturbed, unless absolutely necessary.
 - j. Clearing, grading, and excavation activities are limited to the minimum necessary and the area is restored following installation.
1. Maintenance, repair, or operation of existing structures, facilities, or improved areas, including minor modification of existing serviceable structures within a buffer zone where modification does not adversely impact wetland functions, and subject to the provisions for nonconforming use and facilities.
2. Public and private roadways and railroad facilities, including bridge construction and culvert installation, if the following criteria are met:
 - a. There is no reasonable location or route outside the wetland or wetland buffer based on analysis of system needs, available technology and alternative routes. Location within a wetland buffer shall be preferred over a location within a wetland.
 - b. Facilities parallel to the wetland edge are located as far from the wetland edge as possible and in a manner that minimizes disturbance of soils and vegetation.
 - c. Clearing, grading, and excavation activities are limited to the minimum necessary, which may include placement on elevated structures as an alternative to fill, where feasible.
 - d. Impacts on wetland functions are mitigated in accordance with Section 18.10.070
3. Access to private development sites may be permitted to cross Category II, III, or IV wetlands or their buffers, pursuant to the criteria in Subsection F of this section; provided, that alternative access shall be pursued to the maximum extent feasible, including through the provisions of Chapter 8.24 RCW. Exceptions or deviations from technical standards for width or other dimensions, and specific construction standards to minimize impacts may be specified, including placement on elevated structures as an alternative to fill.

4. Utility lines and facilities providing local delivery service, not including facilities such as electrical substations, water and sewage pumping stations, water storage tanks, petroleum products pipelines and not including transformers or other facilities containing hazardous substances, may be located in Category II, III, and IV wetlands and their buffers and/or Category I wetland buffers if the following criteria are met:
 - a. There is no reasonable location or route outside the wetland or wetland buffer based on analysis of system needs, available technology and alternative routes. Locations within a wetland buffer shall be preferred over locations within a wetland.
 - b. The utility line is located as far from the wetland edge as possible and in a manner that minimizes disturbance of soils and vegetation.
 - c. Clearing, grading, and excavation activities are limited to the minimum necessary to install the utility line, which may include boring, and the area is restored following utility installation.
 - d. Buried utility lines shall be constructed in a manner that prevents adverse impacts to subsurface drainage. This may include the use of trench plugs or other devices as needed to maintain hydrology, as determined by a qualified professional.
 - e. Impacts on wetland functions are mitigated in accordance with Section 18.10.070.
- J. Proposed development activities or uses that may have an adverse impact on wetlands may be required to provide compensatory mitigation, in accordance with the findings and recommendations of a Wetlands Report, as determined by the City.
 1. The standards for compensatory mitigation may be found in the City of Castle Rock document entitled *Guidelines for Classifying and Protecting Wetlands, April 25, 2019*, or as subsequently amended.
 - a. Wetland buffer widths may be increased, decreased, or modified on a case-by-case basis by averaging buffer widths, based on a Wetlands Report that demonstrates to the satisfaction of the City, that the criteria found in the City of Castle Rock document entitled *Guidelines for Classifying and Protecting Wetlands, April 25, 2019*, or as subsequently amended, can be met.

Fish and Wildlife Habitat Conservation

Guidelines for Fish and Wildlife Habitat Conservation Reports

A Critical Area Authorization or Permit is required before any construction or development activity may be initiated on a site with an area that meets the criteria for designation as a Fish and Wildlife Habitat Conservation Area(s) or an associated buffer in accordance with the provisions of City of Castle Rock Municipal Code (CRMC) Chapter 18.10.

1. A Critical Area Authorization may be issued by the City based on a finding that the proposed activity is exempt, or that City has adequate information to determine that the proposal will not have an adverse impact on Critical Areas, and otherwise complies with the provisions of Chapter 18.10.
2. A Critical Area Permit shall be based on the findings and recommendations contained in a Fish and Wildlife Habitat Conservation Report.

Reports for Fish and Wildlife Habitat Conservation Areas shall be prepared by a qualified professional who is a biologist with experience preparing reports for the relevant type of habitat. The City shall determine the scope, content, and format for a required Fish and Wildlife Habitat Conservation Report based on pre-application consultation with the Applicant, his/her consultants, resource agencies, and qualified professionals. The following guidelines are provided as a resource to Applicants. Please note however, that these guidelines are subject to periodic review and update by the City. The most recent version of these guidelines may be obtained at City Hall, or on the City's website.

1. A habitat assessment is an investigation of the project area to evaluate the presence or absence of critical native fish, wildlife, or plant species or habitat. A critical area report for a habitat conservation area shall contain an assessment of habitats including the following site- and proposal-related information at a minimum:
 - a. Detailed description of native vegetation on and adjacent to the project area;
 - b. Identification of any native species of local importance, priority species and habitats (PHS), or endangered, threatened, sensitive or candidate species that have a primary association with habitat on or adjacent to the project area, and assessment of potential project impacts to the use of the site by the species;
 - c. A discussion of any federal, state, or local special management recommendations, including department of fish and wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the project area;
 - d. A detailed discussion of the direct and indirect potential benefits and impacts on habitat by the project, including potential impacts to water quality;

- e. A discussion of measures, including avoidance, minimization, and mitigation, proposed to protect existing habitats to be conducted in accordance with Section 18.10; and
 - f. A discussion of ongoing management practices that will protect habitat after the project site has been developed, including proposed monitoring and maintenance programs, consistent with Section 18.10.
2. In addition, the City may also require:
- a. Detailed surface and subsurface hydrologic features both on and adjacent to the site.
 - b. An evaluation by an independent qualified professional regarding the Applicant's analysis and the effectiveness of any proposed mitigating measures or programs, to include any recommendations as appropriate; and/or
 - c. That the Applicant consults with the Washington Department of Fish and Wildlife, the Cowlitz Tribe, and/or other appropriate agencies prior to preparing and submitting the report.

Standards for Classifying and Protecting Fish and Wildlife Habitat

Areas within the City meeting one or more of the following criteria, may be designated as Fish and Wildlife Habitat Conservation Areas, subject to the provisions of this Section, and shall be managed consistent with the principles of best available science, such as the *Washington State Department of Fish and Wildlife's Management Recommendations for Priority Habitat and Species*.

Table 2: Minimum Recommended Widths of Riparian Habitats

Table 19.15.130-B. Riparian Habitat Areas Stream Type Required RHA Widths

Stream	RHA Width (ft) ^a
Type S water	See SMP
Type F water, channel width greater than 20 feet	150
Type F water, channel width less than or equal to 20 feet	100
Type Np water	50
Type Ns water	50

^a RHA widths shall be measured horizontally from the ordinary high water mark *Source: Cowlitz County Code Section 19.15.130 Fish and Wildlife Habitat Conservation Areas*

A. Fish and wildlife habitat conservation areas—Water bodies—Buffer averaging.

1. The City may permit a proposal to reduce the standard buffer on a portion of the site if the buffer is increased on another portion of the site, so that the total buffer area has not been reduced, based on a written finding that there will be no net loss of ecological function provided that:
 - a. Averaging is necessary to avoid an extraordinary hardship to the applicant caused by circumstances peculiar to the property;
 - b. Supporting documentation may be required from a qualified professional;
 - c. The site has not applied buffer width reduction or modification by any prior action administered by Castle Rock. Sites which utilize this provision are not eligible for any future buffer width modifications, under any provision of this Program, except as part of an approved variance.
 - d. Additional conditions of approval and/or mitigation measures including but not limited to such as requirements to increase native vegetation, limit native vegetation removal, limit the use of fertilizers and pesticides, further protect steep slopes, and/or the payment of a mitigation fee may be required; and

- e. At no point along the shoreline may the buffer be reduced by more than 35% of the standard buffer for the applicable designation, provided that:
 - i. On lots less than 300 feet in depth which are encumbered by a public transportation corridor, the buffer may be reduced through averaging up to 50% of the applicable standard buffer: and
 - ii. All structures are located as far landward as practical, and not closer than 50 feet from the ordinary high water mark.

B. Fish and wildlife habitat conservation areas—Water bodies—Buffer increase.

- 1. The City may increase the width of the standard buffer on a case-by-case basis, based on a critical area report, when a larger buffer is required to protect critical habitats, or such increase is necessary to:
 - a. Protect native fish and wildlife habitat, maintain water quality, ensure adequate flow conveyance; provide adequate recruitment for large woody debris, maintain adequate stream temperatures, or maintain in-stream conditions.
 - b. Compensate for degraded vegetation communities or steep slopes adjacent to the stream.
 - c. Maintain areas for channel migration.

C. Protect adjacent or downstream areas from erosion, landslides, or other hazards.

D. Fish and wildlife habitat conservation areas—Water bodies—Buffer decrease.

- 1. The City may decrease the width of the standard buffer on a case-by-case basis, based on a critical area report, when a larger buffer is required to protect critical habitats, or such increase is necessary to:
 - a. The buffer reduction shall not adversely affect the habitat functions and values of an adjacent habitat conservation area or other critical area
 - b. The slopes adjacent to the habitat conservation area within the buffer area are stable and the gradient does not exceed 30 percent.
 - c. The buffer shall not be reduced to less than 50 percent of the standard buffer as defined in Chapter 18.10. A 35-foot buffer cannot be decreased.
- 2) The following table identifies potential buffer reductions with accompanying riparian habitat enhancement.
- 3) Habitat enhancement plans prepared by a qualified professional must be provided to the City identifying existing conditions, and how the enhancement plan will improve riparian

functions over existing conditions. A five-year monitoring plan must be included. The plan must also address how land outside a reduced buffer would protect surface water quality.

2. When compensatory mitigation is required, the applicant shall submit a compensatory mitigation plan with sufficient information to demonstrate that the proposed activities are logistically feasible, constructible, ecologically sustainable, and likely to succeed. In addition to the requirements of Section 18.10.115, specific information to be provided in the plan shall include:
 - a. General description and scaled drawings of the activities proposed including clearing, grading/excavation, drainage alterations, planting, invasive plant management, installation of habitat structures, irrigation, and other site treatments associated with the development activities and proposed mitigation action(s);
 - b. A description of the functions and values that the proposed mitigation area(s) shall provide, together with a description of required and an assessment of factors that may affect the success of the mitigation program; and
 - b. A description of known management objectives for the native species or habitat.
 - c. Required mitigation shall be completed as soon as possible following activities that will disturb fish and wildlife habitat conservation areas and during the appropriate season. Mitigation shall be completed prior to use or occupancy of the activity or development. Construction of mitigation projects shall be timed to reduce impacts to existing native wildlife and flora.
 3. The City may require monitoring of mitigation activities and submittal of annual monitoring reports to ensure and document that the goals and objectives of the mitigation are met.
 - a. The frequency and duration of the monitoring shall be based on the specific needs of the project, as determined by the City.
- E. Fish and wildlife habitat conservation areas—Piped streams.
- a. Building over a natural stream that is located in an underground pipe or culvert, except as allowed in Section 18.10 for transportation or utility crossings, is prohibited. Relocation of the piped stream system around structures is allowed. The relocated system shall be sized to convey the 100-year future land use condition runoff from the total upstream tributary area as determined from a hydrologic and hydraulic analysis performed in accordance with standards determined by the city.
 - b. No riparian buffers are required along segments of piped or culverted streams unless designated by the City for removal. Any easements or setbacks from pipes or culverts shall be consistent with adopted city regulations or design standards as administered by the city public works department. Setback requirements will include an easement over the piped stream system and a building setback from the edge of the easement. The city will determine the setback requirement during the permit review process. The setback size

will be dependent upon the amount of space that would be needed for maintenance, operation, and future replacement of the piped stream system.

F. Habitat Specific Performance Standards.

1. Endangered, Threatened, and Sensitive Species. No development shall be allowed within a habitat conservation area or buffer with which state or federal endangered, threatened, or sensitive species have a primary association.
 - a. Whenever activities are proposed adjacent to a habitat conservation area with which state or federally endangered, threatened, or sensitive species have a primary association, such area shall be protected through the application of protection measures in accordance with a critical area report prepared by a qualified professional and submitted to the city. Approval for alteration of land adjacent to the habitat conservation area or its buffer shall not occur prior to consultation with the department of fish and wildlife and the appropriate federal agency.
2. Wetland Habitats. All proposed activities within or adjacent to habitat conservation areas containing wetlands shall, at a minimum, conform to the wetland development performance standards set forth in this critical areas manual document, in addition to meeting the habitat conservation area standards in this Chapter.
3. Riparian Habitat Areas. Unless otherwise allowed in this Chapter, all structures and activities shall be located outside of the riparian habitat buffers;
 - a. Buffers shall be established for habitats that include aquatic systems.
 - b. Recommended buffer widths are identified in the critical areas designation map. A riparian habitat shall have at least the buffer width recommended in Table 6, unless a greater width is required pursuant to Section 18.10 and the standards outlined in this manual. Widths shall be measured outward, on the horizontal plane, from the ordinary high water mark or from the top of bank if the ordinary high water mark cannot be identified;
 - c. The required buffer shall be extended to include any adjacent regulated wetland(s), landslide hazard areas and/or erosion hazard areas and required buffers, but shall not be extended across roads or other lawfully established structures or hardened surfaces that are functionally and effectively disconnected from the stream.
 - d. Buffers in conjunction with other critical areas. Where other critical areas defined in this chapter fall within the water body buffer, the buffer area shall be the most beneficial of the buffers applicable to any applicable critical area.
4. Anadromous Fish.
 - a. All activities, uses, and alterations proposed to be located in water bodies used by native anadromous fish or in areas that affect such water bodies shall give special consideration to the preservation and enhancement of native anadromous fish habitat, including adhering to the following standards:

- (1) Activities shall be timed to occur only during the allowable work window as designated by the Washington Department of Fish and Wildlife for the applicable species;
 - (2) An alternative alignment or location for the activity is not feasible;
 - (3) The activity is designed so that it will not degrade the functions or values of the native fish habitat or other critical areas;
 - (4) Shoreline erosion control measures shall be designed to use bioengineering methods or soft armoring techniques, according to an approved critical area report, and
 - (5) Any impacts to the functions or values of the habitat conservation area are mitigated in accordance with an approved mitigation plan.
- b. Structures that prevent the migration of native salmonids shall not be allowed in the portion of water bodies currently used by anadromous fish. Fish bypass facilities shall be provided that allow the upstream migration of adult fish and shall prevent fry and juveniles migrating downstream from being trapped or harmed.
 - c. Fills shall not adversely impact native anadromous fish or their habitat or shall mitigate any unavoidable impacts.
5. Wetland Habitats. All proposed activities within or adjacent to habitat conservation areas containing wetlands shall conform to the wetland development performance standards set forth in the wetland section of this manual and Section 18.10.
 6. In areas designated as high density of wintering birds of prey, tree and perch removal shall be discouraged, and limited to hazard tree removals unless otherwise approved by the director.
 7. In areas designated as hawk habitat tree removal will be restricted to the non-nesting season August through January and limited to hazard tree removal unless otherwise approved by the City.
 8. In areas designated as hawk habitat, and in areas where a hawk nest is known to occur, noise generating activities should be restricted during the nesting season, specifically from March 1 through June 30. Noise generating activities that may be restricted include construction activities that generate more than 100 decibels (like pile-driving, blasting or other intense, short duration impacts).
- G. The following activities or uses may be permitted in streams and/or their buffers when all reasonable measures have been taken to avoid adverse effects on species and habitats, the amount and degree of the alteration are limited to the minimum needed to accomplish the project purpose, and compensatory mitigation is provided for all adverse impacts that cannot be avoided.
1. Restoration of streams previously piped or channeled into a new or relocation streambed when part of a restoration plan that will result in equal or better habitat and water quality and quantity,

and that will not diminish the flow capacity of the stream or other natural stream processes; provided, that the relocation has a state hydraulic project approval and all other applicable permits.

2. Road, trail, bridge, and right-of-way crossings, provided they meet the following criteria:
 - a. There is no other feasible alternative route with less impact on critical areas.
 - b. The crossing minimizes interruption of natural processes such as the downstream movement of wood and gravel and the movement of all native fish and wildlife. Bridges are preferred for all stream crossings and should be designed to maintain the existing stream gradient and substrate, provide adequate horizontal clearance on each side of the ordinary high water mark and adequate vertical clearance above ordinary high water mark for animal passage. If a bridge crossing is not feasible, culverts shall be designed according to applicable state and federal guidance criteria for native fish passage as identified in Fish Passage Design at Road Culverts, WDFW March 1999, and/or the National Marine Fisheries Service Guidelines for Salmonid Passage at Stream Crossings, 2000 (and subsequent revisions), and in accordance with a state hydraulic project approval. The applicant or property owner shall maintain passage for native fish through the bridge or culvert.
 - c. The city may require that existing culverts be removed, repaired, or modified as a condition of approval if the culvert is detrimental to native fish habitat or water quality, and a feasible alternative exists.
 - d. Crossings shall be limited to the minimum width necessary. Common crossings are the preferred approach where multiple properties can be accessed by one crossing.
 - e. Access to private development sites may be permitted to cross streams, if there are no feasible alternative alignments. Alternative access shall be pursued to the maximum extent feasible, including through the provisions of Chapter 8.24 RCW. Exceptions or deviations from technical standards for width or other dimensions, and specific construction standards to minimize impacts may be specified, including placement on elevated structures as an alternative to fill, if feasible.
3. Passive outdoor recreational or educational activities which do not significantly affect the function of the water body or regulated buffer (including wildlife management or viewing structures, outdoor scientific or interpretive facilities, trails, hunting blinds, etc.) and meet the following criteria:
 - a. Trails shall not exceed six feet in width and shall be surfaced with gravel or pervious material, including boardwalk.
 - b. The trail or facility shall be located in the outer 75 percent of the buffer area unless a location closer to the water body edge is required for interpretive purposes.
 - c. The trail or facility shall be constructed and maintained in manner that minimizes disturbance of the water body or buffer.

4. Utility lines and facilities providing local delivery service, not including facilities such as electrical substations, water and sewage pumping stations, water storage tanks, petroleum products pipelines and transformers or other facilities containing hazardous substances, may cross water bodies or be located in buffers, if the following criteria are met:
 - b. There is no reasonable location or route that does not cross the water body or outside the buffer based on analysis of system needs, available technology and alternative routes. Locations within a buffer shall be preferred over locations within a water body. Crossings shall be contained within the footprint of an existing road or utility crossing where possible.
 - c. Impacts to native fish and wildlife habitat shall be avoided to the maximum extent possible and mitigated when avoidance is not feasible.
 - d. Utilities that cross water bodies shall be as close to perpendicular to the channel as possible to minimize disturbance. Boring under the water body may be required.
 - e. If not a crossing, the utility line shall be located as far from the water body as possible.
 - f. The utility installation shall maintain the existing stream gradient and substrate.
 - g. Clearing, grading, and excavation activities shall be limited to the minimum necessary to install the utility line, and the area is restored following utility installation.
5. Stormwater conveyance or discharge facilities such as infiltration systems, dispersion trenches, level spreaders, and outfalls may be permitted in a fish and wildlife habitat conservation area buffer on a case-by-case basis when all of the following are met:
 - a. There are no feasible locations for these facilities outside the buffer.
 - b. The discharge is located as far from the ordinary high water mark as possible and in a manner that minimizes disturbance of soils and vegetation.
 - c. The discharge outlet is in an appropriate location and is designed to prevent erosion and promote infiltration.
 - d. The discharge meets stormwater flow and water quality standard as provided in the 2004 Ecology Stormwater Manual for Eastern Washington, as amended, or the equivalent.
6. Stream bank stabilization, shoreline protection, and public or private launching ramps may be permitted subject to all of the following standards:
 - a. Natural shoreline processes will be maintained to the maximum extent practicable. The activity will not result in increased erosion and will not alter the size or distribution of shoreline or stream substrate, or eliminate or reduce sediment supply from feeder bluffs;
 - b. Adverse impact to native fish or wildlife habitat conservation areas, specifically juvenile and adult native fish migration corridors, or associated wetlands will be mitigated;

- c. Nonstructural measures, such as placing or relocating the development further from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient;
 - d. Stabilization is achieved through bioengineering or soft armoring techniques in accordance with an applicable hydraulic project approval is issued by the Washington Department of Fish and Wildlife;
 - e. Hard bank armoring may occur only when the property contains an existing permanent structure(s) that is/are in danger from shoreline erosion caused by riverine processes; armoring shall not increase erosion on adjacent properties and shall not eliminate or reduce sediment supply.
7. New public flood protection measures and expansion of existing measures may be permitted; provided, that bioengineering or soft armoring techniques shall be used where feasible. Hard bank armoring may occur only in situations where soft approaches do not provide adequate protection, and shall be subject, where applicable, to hydraulic project approval, and other permits.
8. New docks shall be permitted as an accessory to water-dependent uses or associated with a single-family residence; provided, that it is designed and used only as a facility for access to watercraft.
- a. To limit the effects on ecological functions, the number of docks should be limited, and new subdivisions should employ shared moorage whenever feasible.
 - b. Docks shall be located and designed to minimize adverse effects on ecological processes through location where they will interfere with fluvial and limnal processes including gradient and substrate; recruitment of woody debris; and native fish habitat, including that related to native anadromous fish.
 - c. Docks shall minimize reduction in ambient light level by limiting width to the minimum necessary and shall not exceed four feet in width, except where specific information on use patterns justifies a greater width. Materials that will allow light to pass through the deck may be required including grating on walkways or gangplanks in near shore areas.
 - d. Approaches shall utilize piers or other structures to span the entire upper foreshore to the point of intersection with stable upland soils and shall be designed to avoid interfering with stream processes.
 - e. Pile spacing shall be the maximum feasible to minimize shading and avoid a wall effect that would block or baffle currents, sediment movement or movement of native aquatic life forms, or result in structure damage from driftwood impact or entrapment.
 - f. Docks should be constructed of materials that will not adversely affect water quality or native aquatic plants and animals in the long term.

9. Launch ramps may be permitted for access to the water for the public or for residents of a development or for water dependent use subject to the following criteria:
 - a. Launch ramps shall be located and designed to minimize adverse effects on fluvial and limnal processes including stream gradient and substrate; recruitment of woody debris; and native fish habitat, including that related to anadromous fish.
 - b. Ramps shall be placed and maintained near flush with the bank slope. Preferred ramp designs, in order of priority, are:
 - (1) Open grid designs with minimum coverage of beach substrate;
 - (2) Seasonal ramps that can be removed and stored upland;
 - (3) Structures with segmented pads and flexible connections that leave space for natural shoreline substrate and can adapt to changes in shoreline profile.
10. In-stream structures, such as high flow bypasses, dams, and weirs, other than those regulated exclusively by the Federal Energy Regulatory Commission (FERC) shall be permitted only when the multiple public benefits are provided and ecological impacts are fully mitigated. Dams on shorelines of the state shall be regulated in accordance with the shoreline master program.
 - a. In-stream facilities locations shall avoid areas of high habitat value for native aquatic organisms, specifically indigenous anadromous fish.
 - b. In-stream facilities shall be designed to produce the least feasible effect on fluvial processes and shall minimize change in gradient.
 - c. In-stream facilities shall provide mitigation of all impacts on native aquatic species and habitat.
 - d. In-stream facilities shall provide native fish passage, in accordance with Chapter 77.57 RCW.
 - e. A construction bond for 150 percent of the cost of the structure and all mitigation measures shall be filed prior to construction and a maintenance agreement shall specify responsibility for maintenance, shall incorporate the maintenance schedule specified by the design engineer, shall require annual inspections by a civil engineer licensed in the State of Washington and shall stipulate abandonment procedures which shall include, where appropriate, provisions for site restoration.
11. Facilities permitted as shoreline dependent or shoreline oriented uses in accordance with the city shoreline master program, if applicable, may be located in water bodies and buffers; provided, that only those facilities that are water dependent or water oriented and facilities for necessary access may be located in water bodies and buffers; and provided, that the facility is located, designed, constructed and operated to minimize and, where possible, avoid critical area disturbance to the maximum extent feasible.

12. Clearing and grading, when allowed as part of an authorized use or activity or as otherwise allowed in these standards, may be permitted; provided, that the following shall apply:
 - a. Appropriate erosion and sediment control measures shall be used at all times. The soil duff layer shall remain undisturbed to the maximum extent possible. Where feasible, disturbed topsoil shall be redistributed to other areas of the site.
 - b. The moisture-holding capacity of the topsoil layer shall be maintained by minimizing soil compaction or reestablishing natural soil structure and infiltrative capacity on all areas of the project area not covered by impervious surfaces.
13. Repairs to failing on-site sewage systems associated with an existing structure shall be accomplished by utilizing one of the following methods that result in the least impact:
 - a. Connection to an available public sanitary sewer system;
 - b. Replacement with a new on-site sewage system located in compliance with City of Castle Rock applicable standards; and the Walla Walla County Health Department.
 - c. Repair to the existing on-site septic system.

H. Activities that adversely affect native fish and wildlife habitat conservation areas and/or their buffers should generally be avoided through site design, including clustering. Unavoidable impacts to designated native species or habitats shall be compensated for through habitat creation, restoration and/or enhancement to achieve no net loss of habitat functions and values in accordance with the purpose and goals of this chapter.

J. General Performance Standards.

1. A habitat conservation area may be altered only if the proposed alteration of the habitat or the mitigation proposed does not degrade the quantitative and qualitative functions and values of the habitat. All new structures and land alterations shall be prohibited from habitat conservation areas, except in accordance with this Chapter.
2. No plant, wildlife, or fish species not indigenous to the region shall be introduced into a habitat conservation area unless authorized by a state or federal permit or approval.
3. Mitigation sites shall try to achieve contiguous functioning habitat corridors in accordance with a mitigation plan that is part of the critical area report to minimize the isolating effects of development on habitat areas, so long as mitigation of aquatic habitat is located within the same aquatic ecosystem as the area disturbed.
4. The City shall condition approvals of activities allowed within or adjacent to a habitat conservation area or its buffers, as necessary to minimize or mitigate any potential adverse impacts. Conditions shall be guided by best available science and may include:
 - a. Establishment of buffer zones;

- b. Preservation of critically important native vegetation and/or habitat features such as snags and downed wood;
 - c. Limitation of access to the habitat area, including fencing to deter unauthorized access;
 - d. Seasonal restriction of construction activities;
 - e. Establishment of a duration and timetable for periodic review of mitigation activities; and
 - f. Requirement of a performance bond, when necessary, to ensure completion and success of proposed mitigation, pursuant to Section 18.10.120.
5. Mitigation of alterations to habitat conservation areas shall achieve equivalent or greater biologic and hydrologic functions and shall include mitigation for adverse impacts upstream or downstream of the development proposal site. Mitigation shall address each function affected by the alteration to achieve functional equivalency or improvement on a per function basis.
 6. Any approval of alterations or impacts to a habitat conservation area shall be guided by best available science.
 7. The City shall require the establishment of buffer areas for activities adjacent to habitat conservation areas when needed to protect habitat conservation areas. Buffers shall consist of an undisturbed area of native vegetation or areas identified to protect the integrity, functions, and values of the affected habitat. Required buffer widths shall reflect the sensitivity of the habitat and the type and intensity of human activity proposed to be conducted nearby and shall be consistent with the management recommendations issued by the Washington Department of Fish and Wildlife.
 - a. When a species is more susceptible to adverse impacts during specific periods of the year, activities may be further restricted during the specified season.
 8. The subdivision and short subdivision of land in fish and wildlife habitat conservation areas and associated buffers is subject to the following:
 - a. A habitat conservation area or its buffer may not be subdivided.
 - b. The buildable portion of each lot meets the minimum lot size requirements.
 - c. Access roads and utilities serving the proposed development may be permitted within the habitat conservation area and associated buffers only if, the City determines that no other feasible alternative exists and when consistent with this Chapter, and subject to any applicable mitigation requirements.

Geologic Hazard Area

Guidelines for Preparing Geologic Hazard Area Reports

A Critical Area Authorization or Permit is required before any construction or development activity may be initiated on a site with areas that meet the criteria for designation as a designated Geologic Hazard Area(s) or an associated buffer, in accordance with the provisions of CRMC Chapter 18.10

1. A Critical Area Authorization shall be issued based on a finding that the proposed activity is exempt, or that City has adequate information to determine that the proposal will not have an adverse impact on Critical Areas, and otherwise complies with the provisions of CRMC and this manual.
2. A Critical Area Permit shall be based on the findings and recommendations contained in a Geologic Hazard Area Report.

Reports for geologic hazard areas shall be prepared by a geotechnical engineer or geologist, licensed in the State of Washington, with experience analyzing geologic, hydrologic, and ground water flow systems; or by a geologist who earns his or her livelihood from the field of geology and/or geotechnical analysis, with experience analyzing geologic, hydrologic and ground water flow systems, who has experience preparing reports for the relevant type of hazard. Preparation of these reports by a State of Washington registered geologist is preferred.

The City shall determine the scope, content, and format for the required Geologic Hazard Area Report based on pre-application consultation with the Applicant, resource agencies, and qualified professionals. The following guidelines are provided as a resource to Applicants. Please note however, that these guidelines are subject to periodic review and update by the City. The most recent version of these guidelines may be obtained at City Hall, or on the City's website.

Typically, a Geologic Hazard Area Report should include:

1. Site and Construction Plans. The report shall include a copy of the site plans for the proposal showing:
 - a. The type and extent of geologic hazard areas, and any other critical areas, and buffers on, adjacent to, or within 200 feet of, or that are likely to impact the proposal;
 - b. Proposed development, including the location of existing and proposed structures, fill, storage of materials, and drainage facilities, with dimensions indicating distances to the floodplain;
 - c. The topography, in two-foot contours, of the project area and all hazard areas addressed in the report; and

- d. Clearing limits.
2. Assessment of Geological Characteristics. The report shall include an assessment of the geologic characteristics and engineering properties of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, and a review of the readily available site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted taxonomic classification systems in use in the region. The assessment shall include, but not be limited to:
 - a. A description of the surface and subsurface geology, hydrology, soils, and vegetation found in the project area and in all hazard areas addressed in the report;
 - b. A detailed overview of the field investigations, published data and references; data and conclusions from past assessments of the site; and site-specific measurements, test, investigations, or studies that support the identification of geologic hazard areas; and
 - c. A description of the vulnerability of the site to seismic and other geologic events.
3. The report shall contain a geotechnical analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property and affected adjacent properties; and
4. The report shall make a recommendation for the minimum no-disturbance buffer and minimum building setback from any geologic hazard based upon the geotechnical analysis.
5. Where a valid geotechnical report has been prepared within the last five years for a specific site, and where the proposed land use activity and surrounding site conditions are unchanged, said report may be incorporated into the required critical area report. The applicant shall submit a geotechnical assessment detailing any changed environmental conditions associated with the site.
6. When hazard mitigation is required, the mitigation plan shall specifically address how the activity maintains or reduces the pre-existing level of risk to the site and adjacent properties on a long-term basis (equal to or exceeding the projected lifespan of the activity or occupation). Proposed mitigation techniques shall be considered to provide long-term hazard reduction only if they do not require regular maintenance or other actions to maintain their function. Mitigation may also be required to avoid any increase in risk above the pre-existing conditions following abandonment of the activity.
7. A report for an erosion hazard or landslide hazard area shall include the following information:
 - a. A site plan for the proposal showing:
 - (1) The height of slope, slope gradient, and cross section of the project area;
 - (2) The location of springs, seeps, or other surface expressions of ground water on or within 200 feet of the project area or that have potential to be affected by the proposal; and
 - (3) The location and description of surface water runoff;

- b. The geotechnical analysis shall specifically include:
 - (1) A description of the extent and type of vegetative cover;
 - (2) An estimate of load capacity including surface and ground water conditions, public and private sewage disposal systems, fills and excavations and all structural development;
 - (3) An estimate of slope stability and the effect construction and placement of structures will have on the slope over the estimated life of the structure;
 - (4) An estimate of the bluff retreat rate that recognizes and reflects potential catastrophic events such as seismic activity or a 100-year storm event;
 - (5) Consideration of the run-out hazard of landslide debris and/or the impacts of landslide run-out on down slope properties.
 - (6) A study of slope stability including an analysis of proposed angles of cut and fill and site grading;
 - (7) Recommendations for building limitations, structural foundations, and an estimate of foundation settlement;
 - (8) An analysis of proposed surface and subsurface drainage, and the vulnerability of the site to erosion;

- c. The hazards analysis component of the report shall specifically include:
 - (1) A description of the extent and type of vegetative cover;
 - (2) A description of subsurface conditions based on data from site-specific explorations;
 - (3) Descriptions of surface and ground water conditions, public and private sewage disposal systems, fills and excavations, and all structural improvements;
 - (4) An estimate of slope stability and the effect construction and placement of structures will have on the slope over the estimated life of the structure;
 - (5) An estimate of the bluff retreat rate that recognizes and reflects potential catastrophic events such as seismic activity or a 100-year storm event;
 - (6) Consideration of the run-out hazard of landslide debris and/or the impacts of landslide run-out on down slope properties;
 - (7) A study of slope stability including an analysis of proposed cuts, fills, and other site grading;
 - (8) Recommendations for building siting limitations; and

- (9) An analysis of proposed surface and subsurface drainage, and the vulnerability of the site to erosion;
 - d. The technical information for a project within a landslide hazard area shall include a geotechnical engineering report prepared by an engineer licensed in the State of Washington that presents engineering recommendations for the following:
 - (1) Parameters for design of site improvements including appropriate foundations and retaining structures. These should include allowable load and resistance capacities for bearing and lateral loads, installation considerations, and estimates of settlement performance;
 - (2) Recommendations for drainage and subdrainage improvements;
 - (3) Earthwork recommendations including clearing and site preparation criteria, fill placement and compaction criteria, temporary and permanent slope inclinations and protection, and temporary excavation support, if necessary; and
 - (4) Mitigation of adverse site conditions including slope stabilization measures and seismically unstable soils, if appropriate;
 - e. For any development proposal on a site containing an erosion hazard area, an erosion and sediment control plan shall be required. The erosion and sediment control plan shall be prepared in compliance with requirements set forth in the City's construction standards;
 - f. The report shall include a drainage plan for the collection, transport, treatment, discharge and/or recycle of water. The drainage plan should consider on-site septic system disposal volumes where the additional volume will affect the erosion or landslide hazard area.
 - g. Hazard and environmental mitigation plans for erosion and landslide hazard areas shall include the location and methods of drainage, surface water management, locations and methods of erosion control, a vegetation management and/or replanting plan and/or other means for maintaining long term soil stability.
 - h. If the City determines that there is a significant risk of damage to downstream receiving waters due to potential erosion from the site, based on the size of the project, the proximity to the receiving waters, or the sensitivity of the receiving waters, the critical area report shall include a plan to monitor the surface water discharge from the site. The monitoring plan shall include a recommended schedule for submitting monitoring reports to the city.
8. In addition to the basic report requirements, a report for a seismic hazard area shall also meet the following requirements:
- a. The site map shall show all known and mapped faults within 200 feet of the project area, or that have potential to be affected by the proposal.

- b. The hazards analysis shall include a complete discussion of the potential impacts of seismic activity on the site (for example, forces generated, fault displacement and liquefaction potential).
 - c. Where liquefaction risks of high, moderate to high or moderate exist, the report shall address soil and structural mitigation measures.
9. Other Geologic Hazard Areas. In addition to the basic report requirements, the City may require the following information to be included in the report when determined to be necessary to the review of the proposed activity and the hazard in question,
- a. Site Plan. The site plan shall show all hazard areas located within 200 feet of the project area or that have potential to be affected by the proposal; and
 - b. Geotechnical Analysis. The geotechnical analysis shall include a complete discussion of the potential impacts of the hazard on the project area and of the proposal on the hazard area.

Standards for Identifying and Protecting Geologic Hazard Areas

A. Geologic hazard areas in the City of Castle Rock shall include those areas that are susceptible to one or more of the following types of hazards:

1. Erosion hazard;
2. Landslide hazard;
3. Seismic hazard; or
4. Other geological events including, mass wasting, debris flows, rock falls, and differential settlement.

B. Erosion hazard areas include sites which:

1. Contain soils or soils complexes identified by the U.S. Department of Agriculture's Natural Resource Conservation Service or the Soil Survey for City of Castle Rock as having "moderate to severe," "severe" or "very severe" erosion hazard potential; or
2. Are impacted by stream bank erosion; or
3. Areas with a slope greater than 15 percent.

C. Landslide hazard areas include sites which are susceptible to landslides because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other physical factors. Potential landslide hazard areas exhibit one or more of the following characteristics:

1. Slopes exceeding 35 percent with a vertical relief of ten or more feet except areas composed of competent rock and properly engineered slopes designed and approved by a geotechnical engineer licensed in the State of Washington and experienced with the types of conditions present at the site in question;
2. Areas mapped by the Washington State Department of Natural Resources (slope stability mapping) as unstable ("U"), unstable old slides ("UOS"), or unstable recent slides ("URS");
3. Areas designated by the U.S. Department of Agriculture's Natural Resource Conservation Service as having "severe" limitation for building site development;
4. Areas that have shown evidence of historic failure or instability, including back-rotated benches on slopes; areas with structures that exhibit structural damage such as settling and racking of building foundations; and areas that have toppling, leaning, or bowed trees caused by ground surface movement;

5. Slopes greater than 15 percent that have a relatively permeable geologic unit overlying a relatively impermeable unit and having springs or groundwater seepage;
6. Areas potentially unstable as a result of rapid stream incision, stream bank erosion, and undercutting by wave action;
7. Areas located in a canyon or active alluvial fan, presently or potentially subject to inundation by debris flows or catastrophic flooding; and
8. Areas designated as quaternary slumps, earthflows, mudflows, lahars, or landslides on maps published by the U.S. Geological Survey or Washington State Department of Natural Resources;
9. Areas that are at risk of mass wasting due to seismic forces; and
10. Slopes having gradients steeper than 80 percent subject to rock fall during seismic shaking.

D. Seismic hazards areas include sites identified in Washington State Department of Natural Resources seismic hazard and liquefaction susceptibility maps for Eastern Washington and other geologic resources. Seismic hazard areas are those areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, soil liquefaction or surface faulting including:

1. Areas subject to surface faulting during a seismic event;
2. Areas with underlying deposits indicative of a risk of liquefaction during a seismic event, including those areas mapped as "moderate", "moderate to high" and "high" by the Washington State Department of Natural Resources;
3. Areas subject to slope failure during a seismic event;
4. Areas that are at risk of mass wasting due to seismic forces.

Geologic hazard areas shall also include sites with other geologic hazards determined by a qualified professional to be subject to severe risk of damage as a result of other geological events including mass wasting, debris flows, rock falls and differential settlement.

E. Development activities proposed for sites that contain Geologic Hazard Areas shall comply with the following Performance Standards, unless otherwise provided:

1. Alterations of geologic hazard areas or associated buffers may only occur for activities that:
 - a. Will not increase the threat of the geological hazard to adjacent properties beyond pre-development conditions;
 - b. Will not adversely impact other critical areas;
 - c. Are designed so that the hazard to the project is eliminated or mitigated to a level equal to or less than pre-development conditions; and

- d. Are determined to be safe as designed and under anticipated conditions by a qualified engineer or geologist, licensed in the State of Washington.
2. Critical facilities shall not be located in seismic hazard areas unless mitigation shall be provided which renders the proposed development as stable as if it were not located within a seismic hazard area.
3. In addition to the provisions of this Chapter, alterations of geologic hazard areas or associated buffers must conform to city construction standards and building codes.
4. Development may be allowed in seismic hazard areas when all of the following apply:
 - a. If evaluation of site-specific subsurface conditions by a qualified professional demonstrates that the proposed development site is not subject to the conditions indicating seismic risk, the provisions of this Subsection shall not apply.
 - b. If a site is subject to seismic risk, the applicant shall implement appropriate engineering design based on analysis by a qualified professional of the best available engineering and geological practices that either eliminates or minimizes the risk of structural damage or injury resulting from seismically induced settlement or soil liquefaction, including compliance with the following criteria:
 - (1) Subdivision within a seismic hazard areas shall assure that each resulting lot has sufficient buildable area outside of the hazard area or that appropriate limitations on building and reference to appropriate standards are incorporated into subdivision approval and may be placed as restrictions on the face of the plat;
 - (2) Structures in seismic hazard areas shall conform to applicable analysis and design criteria and provisions of building and construction codes as currently adopted by the city.
 - (3) Public roads, bridges, utilities and trails shall be allowed when there are no feasible alternative locations and geotechnical analysis and design are provided that ensure the roadway, bridge and utility structures and facilities will not be susceptible to damage from seismic induced ground deformation. Mitigation measures shall be designed in accordance with the most recent version of the American Association of State Highway and Transportation Officials (AASHTO) Manual or other appropriate document.

F. Activities on sites containing erosion or landslide hazards shall also meet the following requirements:

1. A buffer shall be established from all edges of erosion or landslide hazard areas. The size of the buffer shall be determined by the director to eliminate or minimize the risk of property damage, death or injury resulting from erosion and landslides caused in whole or part by the development, based upon review of and concurrence with a critical area report prepared by a qualified professional.
 - a. The minimum buffer shall be equal to the height of the slope or 50 feet, whichever is greater.

- b. The buffer may be reduced to a minimum of ten feet when a qualified professional demonstrates to the City's satisfaction that the reduction will adequately protect the proposed development, adjacent developments and uses and the subject critical area.
 - c. The buffer may be increased where the director determines that a larger buffer is necessary to prevent risk of damage to proposed and existing development; provided that information supporting a buffer increase shall be provided to the applicant in writing and shall contain a specific explanation regarding the need and purpose of the increase.
2. Alterations of an erosion or landslide hazard area and/or buffer may only occur for activities for which a geotechnical analysis is submitted and determines that:
 - a. The development will not increase surface water discharge or sedimentation to adjacent properties beyond pre-development conditions;
 - b. The development will not decrease slope stability on adjacent properties; and
 - c. Such alterations will not adversely impact other critical areas.
3. Development within an erosion or landslide hazard area and/or buffer shall be designed to meet the following basic requirements unless it can be demonstrated that an alternative design that deviates from one or more of these standards provides greater long-term slope stability while meeting all other provisions of this Chapter. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function. In addition to those requirements outlined in Section 18.10, the basic development construction standards within geologic hazard areas are:
 - a. The proposed development shall not decrease the factor of safety for landslide occurrences below the limits of 1.5 for static conditions and 1.2 for dynamic conditions. Analysis of dynamic conditions shall be based on a minimum horizontal acceleration as established by the current version of the International Building Code.
 - b. Structures and improvements should be clustered to avoid geologic hazard areas and other critical areas.
 - c. Structures and improvements shall minimize alterations to the natural contour of the slope and foundations shall be tiered where possible to conform to existing topography.
 - d. Structures and improvements should be located to preserve the most critical portion of the site and its natural landforms and vegetation.
 - e. The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties.
 - f. The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes.
 - g. Development shall be designed to minimize impervious lot coverage.

4. Unless otherwise provided or as part of an approved alteration, removal of vegetation from an erosion or landslide hazard area or related buffer shall be prohibited;
5. Utility lines and pipes shall be permitted in erosion and landslide hazard areas only when the applicant demonstrates that no other practical alternative is available. The line or pipe shall be located above ground and properly anchored and/or designed so that it will continue to function in the event of an underlying slide. Stormwater conveyance shall be allowed consistent with local design and construction standards.
6. Point discharges from surface water facilities and roof drains onto or upstream from an erosion or landslide hazard area shall be prohibited except as follows:
 - a. Conveyed via continuous storm pipe downslope to a point where there are no erosion hazards areas downstream from the discharge;
 - b. Discharged at flow durations matching predeveloped conditions, with adequate energy dissipation, into existing channels that previously conveyed stormwater runoff in the predeveloped state; or
 - c. Dispersed discharge upslope of the steep slope onto a low-gradient undisturbed buffer demonstrated to be adequate to infiltrate all surface and stormwater runoff, and where it can be demonstrated that such discharge will not increase the saturation of the slope;
7. The division of land in erosion and landslide hazard areas and associated buffers is subject to the following:
 - a. An erosion or landslide hazard area or its buffer may not be subdivided.
 - b. The buildable portion of each lot meets the minimum lot size requirements.
 - c. Access roads and utilities may be permitted within the erosion or landslide hazard area and associated buffers if, based on the associated critical area report, the city determines that no other feasible alternative exists, and subject to any applicable mitigation requirements.
8. On-site sewage disposal systems, including drain fields, shall be prohibited within erosion and landslide hazard areas and related buffers.

G. Sites containing extreme slope hazards as determined by a qualified professional shall be considered unbuildable. This includes construction of buildings, sewage disposal systems and roads.

Special Flood Hazard Area

Guidelines for Preparing a Special Flood Hazard Area Reports

A Critical Area Authorization or Permit is required before any construction or development activity may be initiated on a site with a designated Special Flood Hazard Area(s) in accordance with the provisions of CRMC Chapter 18.10.050.

1. A Critical Area Authorization shall be issued based on a finding that the proposed activity is exempt, or that City has adequate information to determine that the proposal will not have an adverse impact on Critical Areas, and otherwise complies with the provisions of Chapter 18.10.
2. A Critical Area Permit shall be based on the findings and recommendations contained in a Special Flood Hazard Area Report.

Reports for Special Flood Hazard Areas shall be prepared by a professional engineer, architect, or qualified professional, as determined by the City. The City shall determine the scope, content, and format for a required Special Flood Hazard Area Report based on pre-application consultation with the Applicant, resource agencies, and qualified professionals. The following guidelines are provided as a resource to Applicants. Please note however, that these guidelines are subject to periodic review and update by the City. The most recent version of these guidelines may be obtained at City Hall, or on the City's website.

Typically, a Special Flood Hazard Area Report should include:

1. A written report that may include, but is not limited to:
 - a. A narrative description of the proposed development;
 - b. Characterization of the Special Flood Hazard Area;
 - c. A description of proposed flood proofing measures, and the basis for those measures;
 - d. Other measures proposed to avoid or minimize potential adverse impacts; and
 - e. A description of the extent to which any watercourse will be altered or relocated as a result of proposed development and proposed mitigating measures; and
 - f. Certification that the proposed floodproofing methods and mitigating measures comply with the applicable standards for the Special Flood Hazard Zone.
2. A map of the proposed site, drawn to scale, depicting:
 - a. Property lines and ownership;

- b. The boundaries of any Special Flood Hazard Areas and any other critical areas and their buffers on or adjacent to the site;
- c. Existing and proposed contour lines;
- d. Base flood elevation data available on or near the site;
- e. The location of existing and proposed utilities, impervious surfaces, and easements;
- f. The location and elevations of existing structures;
- g. The location of proposed structures and the elevation of the lowest habitable floor (including basements); and
- h. Proposed areas where no, or limited development, shall occur.

Critical Aquifer Recharge Area

Guidelines for Preparing Critical Aquifer Recharge Area Reports

Development activities that have the potential to negatively impact the quality or quantity of groundwater, shall not be permitted, unless a hydrogeologic testing and site evaluation satisfactorily demonstrates that significant adverse impacts can be avoided, minimized, or mitigated. The required hydrogeologic testing and site evaluation shall be conducted by a qualified expert, as determined by the City. A written report shall be submitted for City review and should include:

1. Characterization of the site and its relationship to the aquifer and an analysis of:
 - a. The geologic setting and soils information of site and surrounding area.
 - b. Water quality data, including pH, temperature, conductivity, nitrates, and bacteria.
 - c. Location and depth to perched water tables.
 - d. Recharge potential of facility site (permeability/transmissivity).
 - e. Local groundwater flow, direction and gradient.
 - f. Surface water locations within one thousand feet of the site.
2. An evaluation of the ability of the site to accommodate the proposed activity including a discussion of the effects of the proposed project on groundwater quality and quantity.
3. Recommendations on appropriate mitigation, if any, to assure that there shall be no significant degradation of groundwater quality or quantity.