HIGHER REGULATORY STANDARDS

Ideas and examples of floodplain management regulations that exceed National Flood Insurance Program (NFIP) minimum requirements

FEMA REGION 10

HIGHER

FLOODPLAIN MANAGEMENT
REGULATORY STANDARDS

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INTRODUCTION

Fueled by a robust economy and a high quality of life, the Pacific Northwest is a magnet for newcomers. As our population and affluence increases, so too will pressures to develop floodplain lands and other hazardous areas. This increasing development pressure creates a paradox for many local communities: how to provide quality housing, commercial/industrial space and efficient transportation systems, while at the same time preserving or enhancing the natural environment? Although this paradox applies to all land-use decisions, it seems especially acute when dealing with water resources and floodplain management issues.

Many communities realize that the minimum floodplain management requirements of the National Flood Insurance Program (NFIP) may not provide a high enough degree of flood damage reduction, and afford very little protection to riparian habitat. Given this, local governments are working to refine their basic flood damage prevention ordinances to incorporate additional property protection safeguards for new developments. Many of these same communities are also searching for ways to protect and even enhance fish habitat to meet not only their citizens' desires, but State and Federal regulations as well.

The purpose of this document is to provide local communities with some regulatory land-use ideas that seek to better balance the needs between floodplain development and maintaining the natural and beneficial functions of the floodplain. The document is divided into three chapters that highlight each of the components of a sound floodplain management strategy:

Chapter 1 / Floodplain Development — provides ideas on modifications to local flood ordinances to reduce physical flood damages to structures.

Chapter 2 / Fish Habitat Protection — provides strategies to protect and enhance aquatic and riparian habitat.

Chapter 3 / Stormwater Management — provides an overview of upland runoff controls to reduce peak flood flows and improve water quality.

Finally, in the appendices, are excerpts of higher regulatory standards found in flood ordinances from communities around the Northwest, as well as model ordinances pertaining to fish habitat protection and stormwater management.

ONE | FLOODPLAIN DEVELOPMENT

Floods are an act of God; Flood damages result from acts of men

Nearly every community in the Pacific Northwest has adopted a flood damage prevention ordinance as a minimum requirement for participation in the National Flood Insurance Program (NFIP). However, many communities have gone beyond the minimum NFIP requirements by passing flood ordinances that include more rigorous standards for new floodplain developments.

These higher regulatory standards for floodplain development help to reduce future economic loss by making structures and infrastructure more resistant to flood damage. In addition, some of these higher NFIP standards can also help to minimize environmental harm to stream corridors. Many communities adopt higher flood ordinance standards not just to safeguard the riparian corridor and lessen future flood damages, but also to gain credit under the NFIP's Community Rating System in order to reduce flood insurance premiums for policyholders in their community. Some of these higher standards include:

Setbacks – With a setback, structures are required to be sited back away from the top of the bank of a stream or river, or setback from the floodway line a minimum distance (e.g., 50 or 100 feet). Setbacks have several advantages: (1) they provide an added margin of safety by keeping structures away from higher velocity flood waters closer to the channel; (2) they reduce flood losses caused by streambank failure when stream channels naturally migrate and erode the land, undermining near-bank structures; and, (3) they can provide a riparian buffer along the stream channel to protect fish and wildlife habitat.

Freeboard — Many communities require the lowest floor of structures to be elevated one, two or more feet above the base flood elevation (BFE). Although building to the BFE is the minimum FEMA standard, there are several reasons why communities adopt a freeboard requirement: (1) larger floods than the base or 100-year flood do occur; (2) building only to the BFE may not protect floor joists, heating ducts, and insulation since they may be below BFE; (3) the BFE is based on current conditions, and flood heights often increase, especially in urban areas as development increases; (4) the higher the lowest floor above the BFE, the cheaper the flood insurance rates; and, (5) the added margin of safety provides peace of mind to the property owner. [the State of Oregon requires one-foot of freeboard].

Compensatory storage – Sometimes referred to as "cut-and-fill", this provision requires developers to compensate for the loss of flood storage caused by filling in the floodplain fringe by removing an equal amount of material in the floodplain near the proposed development. This requirement helps to maintain flood storage and ensure that floodwaters will not be displaced onto someone else's property as the result of a floodplain fill.

Fill Prohibition – Some communities have restricted the placement of fill in floodplains altogether in order to maintain floodplain storage and lessen environmental impacts. This provision also creates a disincentive to build in the floodplain, since without the placement of fill, a builder would not qualify for a Letter of Map Revision (LOMR) from FEMA. A LOMR removes an area elevated on fill from the regulatory floodplain by letter or through a flood map revision. Most banks will waive the flood insurance requirement if a builder or homeowner presents a LOMR.

Subdivision Egress and Ingress – All too often developments placed in the floodplain are "islands" during a flood. This creates a dangerous situation for property owners trying to cross floodwaters by foot or by vehicle. This island effect also places a burden on local emergency services that must evacuate stranded homeowners. To combat this, a provision in the local flood ordinance could require that all developments have at least one exit route that will remain dry during a flood event.

Safeguard Critical Facilities – Some facilities if impacted by floodwaters could have a significant negative impact on emergency response, water quality, or on special populations. Given this, it may be prudent to require certain critical facilities like schools,

fire/police stations, nursing homes, and chemical storage tanks to be sited outside of the floodplain, or built with the lowest floor significantly above the base flood elevation.

Higher Floodway Surcharge – Some communities use a .1 foot or .5 foot surcharge (instead of the normal FEMA standard of a 1 foot surcharge) as the basis for computing the regulatory floodway on their flood insurance rate maps (FIRMs). This higher floodway surcharge standard used in hydraulic computer modeling usually results in a wider floodway which means a smaller developable area in the floodplain.

Prohibit Floodway Development – Even though the minimum NFIP regulations make development in the regulatory floodway portion of the floodplain difficult, it is still possible. By proving that a proposed development will cause "no-rise" to base flood heights, a structure, bridge abutment, road or berm could be built in the floodway. To keep the floodway open, some communities prohibit some or all development activities within the regulatory floodway. This not only assures unimpeded conveyance of floodwaters, but also keeps development away from the stream channel, helping to create a riparian buffer zone. [The State of Washington prohibits placement of residential structures in the floodway, with some minor exceptions for agricultural uses].

Depth / Velocity Provisions – The regulatory floodway as shown on the FIRM may not be the only area where swift moving floodwaters pose a danger to human life and the built environment. Oftentimes, overflow channels carry high velocity flood flows. Because these overflow areas may not be designated as floodways, developments could be allowed in these high-risk areas. To avoid putting people and property at risk, special floodways based on a combination of flood depths and flood velocities could be established and regulated like a conventional floodway.

Cumulative Substantial Improvement/Damage – The minimum requirement of the NFIP treats any structure that will incur improvements totaling more than 50% of the market value of the structure, as a new structure – meaning the structure will need to be elevated above BFE. Some communities have reduced this 50% threshold, and have began to track these improvements over time (ie, structure must be elevated if they received flood damage two times over the past 10 years, of which the cost to repair after each flood equals 25% of the market value on average). Since 1997, NFIP policyholders can get up to $20,000 to elevate their homes if they are determined to be substantially damaged under the Increased Cost of Compliance provision of their flood policy.

Limiting below-BFE enclosures – Structures built on foundation stem-walls in the floodplain with the lowest habitable floor several feet or more above grade are usually built appropriately, with adequate flood vent openings, and with areas below the BFE unfinished and used only for parking, building access, and limited storage. Unfortunately, many homeowners convert this below-BFE space into habitable uses (bedrooms, bathrooms, etc.). To keep these violations from occurring, some communities require stem-walls to be no more than 4-feet in height, and/or prohibit standard doorways or interior stairways to limit interior access options. Others require homeowners to pledge not to finish below-BFE areas by signing "non-conversion" agreements.

Flood Zone Districts – Through a zoning ordinance, floodplains can be designated as one or more zoning districts in which development is prohibited or allowed only if it minimizes exposure to flood damage. Some types of flood districts are dedicated for recreation, public use, or conservation. Other zoning or subdivision requirements are cluster developments to avoid the flood hazard or density provisions that keep the number of structures allowed in the floodplain to a minimal number.

Hazardous Materials – Petroleum products, chemicals and other toxic substances located in the floodplain not only leak during a flood causing health/ecological problems, but can also become floating debris that may strike buildings or plug bridge/culvert openings causing increased flood heights and damages. Hazardous materials should be stored outside the floodplain, or, at a minimum, be elevated higher than the base flood elevation with explicit anchoring requirements.

• For more information see Appendix A

TWO | FISH HABITAT PROTECTION

What will we leave for our children,
excuses or salmon?

Floodplain connectivity with streams and rivers is recognized as a necessary habitat element in order for wild salmon to continue to exist. As stated in Portland Metro's Streamside CPR, "the interaction of the channel with its floodplain tends to create unique biological communities, cutoff oxbows, sandbars, backwaters, undercut banks, floodplain pools and extensive high water tables – much of the aquatic productivity occurs in the floodplain."

Natural resource agencies at every level of government have consistently emphasized the contributions of floodplains to healthy fish habitat. With the recent listing of several salmonid species as threatened or endangered under the Endangered Species Act (ESA) in large areas of the Northwest, the need to protect and restore aquatic habitat has taken on a new urgency. Unfortunately, many communities continue to rely on the minimum requirements of the National Flood Insurance Program (NFIP) to regulate activities in the floodplain. Others, however, have realized that the purely economic flood loss reduction objectives of the NFIP may not provide an adequate level of stream habitat protection.

What is clear is that sound stewardship of floodplains can be an extremely important factor in protecting habitat for fish, and that an enhanced flood damage reduction ordinance (see model in Appendix B) which incorporates the measures to protect riparian habitat listed below can be of great value.

Riparian Buffer Zones (RBZ) – One of the biggest challenges in terms of protecting fish habitat seems to be "how much is enough", meaning how large of an area should be

protected near a stream or river in order to provide effective riparian habitat. Many communities require some kind of riparian setback zone accepting that the most effective way of protecting aquatic and riparian habitats is through the establishment of riparian buffer areas. In the RBZ certain land-use restrictions would apply including: no new buildings; no roads, parking lots or other impervious surfaces; no grading, filling or other land disturbance activities; and no septic systems. Although there is no uniformity of opinion, much of the scientific data to date suggests that RBZs of 150-200 feet from the top of bank should provide adequate fish habitat protection.

Channel Migration Zones (CZM) – Riparian buffer zones can also be determined using the boundaries of the lateral extent of likely movement along a stream reach, or a channel migration zone. By protecting historical stream meander patterns, a similar setback criteria as an RBZ can be accomplished. To provide an additional measure of protection, the RBZ distance could be measured not from the stream itself, but from the edge of the area within which a stream naturally migrates back and forth over time (aka, the channel migration zone).

Limit Floodplain Development – In areas outside of the RBZ in the floodplain, development could be permitted, but with limitations on such activities as fills, the amount of impervious surfaces, and removal of native vegetation. Filling in the floodplain could be prohibited unless a qualified professional certifies that the proposed fill will not be harmful to fish, and will not block channel migration. In order to maintain essential habitat processes such as natural water infiltration rates and sediment filtering, the amount of new impervious surfaces allowed in the floodplain could be limited. Finally, to provide additional protection to the vegetation in the RBZ, building setbacks from the RBZ boundary could be established.

Stream Typing System – This is a system based on State typing systems used to classify streams according to their size and fish-bearing capacity. Many communities use such a system to determine the width of the riparian buffer zones (i.e., higher order streams require a greater buffer zone).

Bridge Requirement – If crossing a stream is unavoidable, effects to fish habitat can be minimized by requiring the construction of bridges instead of culverts. Bridges should be required for all higher order streams. If culverts are permitted over smaller drainages they should be arch/bottomless or comparable culverts as defined in State Fish and

Wildlife manuals such as the Washington DFW document "Fish Passage Design at Road Culverts". Both bridges and culverts should be built perpendicular to the stream and should allow for the unimpeded downstream movement of gravels and woody debris.

Maintain Natural Meander Patterns – Alterations to stream channels should be prohibited unless the goal is to restore the channel to a more natural state. Indeed, wherever feasible, channels that are not natural should be restored to achieve features including side channels, meander patterns, channel complexity, and floodplain connectivity. Some communities require fees to fund restoration work on other areas of a stream if restoration of the stream segment at the project site is not feasible.

Remove Existing Culverts – Removing culverts that inhibit healthy fish habitat is a restoration measure. If a proposed culvert replacement, streambank stabilization, or watercourse alteration is under consideration, it may be appropriate to obtain a reasonable degree of restoration, especially in cases where there are clearly non-functional culverts. Fixing a single culvert can open up many miles of a stream for spawning salmonids.

Prohibit Blockage of Side Channels – Side channels and off-channel habitat should remain connected to the main channel and be passable for salmonids. Therefore, any activity that would cut-off side channels during the course of an alteration or due to a floodplain fill should be prohibited.

Fish Screens – For alterations that involve creation of man-made side channels, there should be adequate fish barriers or screening to assure that fish will not become trapped, lost, stranded or destroyed through diversions for irrigation, water supply, recreation or hydropower. Several States require that diversions be screened to protect fish.

ìSoftî Armoring of Streambanks – For any salmonid-bearing stream (especially those subject to channel migration) soft-armoring methods should be required for any streambank stabilization project. Streams should be allowed to meander naturally. The use of "hard" armoring techniques like rock rip-rap usually have a negative impact on the geomorphological and biological functions of a stream, and oftentimes merely shift the bank erosion downstream.

Siting Requirements – If a lot has a buildable site outside the floodplain, new construction should be directed to the non-floodprone area of the parcel. If there is no option but to build in the floodplain, a structure should be sited as far back away from the watercourse as practicable. Local permitting officials should also require that the 10-year and 50-year floodplain boundary be placed on the site drawings. This information may help the applicant in his/her decision to site the structure further from the channel. Some communities simply prohibit development in the floodplain altogether with some exceptions for agricultural uses.

Protect Hyporheic Zones – While the hyporheic zone is difficult to actually delineate on a map, it can be detected from well samples, the presence of stone flies and, sometimes, can be seen in an actively upwelling springbrook. Disruptions to the hyporheic zone can negatively impact water flow, temperature, nutrient supply, and water quality. Development in the floodplain should not cause dewatering of the hyporheic zone, interrupt groundwater exchange or inhibit recharge of the zone. If certain areas are sensitive to hyporheic exchanges, than additional data from the applicant should be obtained to assure the development causes minimal disruption to the system.

Septic System Restrictions – Septic systems are often destroyed when channels migrate resulting in negative impacts to water quality, and can interfere with natural channel migration processes. Given this, many communities restrict the placement of septic systems within the riparian buffer zone, floodway, 10-year floodplain, or some other setback distance.

• For more information see Appendix B

THREE | STORMWATER MANAGEMENT

We all live downstream

Land development alters the natural hydrological cycle by removing vegetative cover, changing the soil structure, modifying natural surface drainage patterns, and adding impervious surfaces such as roads and parking lots.

This altering of drainage patterns results in higher peak flows as rainwater reaches streams quicker and in larger volumes causing more frequent and severe flooding. In addition, stream channels are often eroded by these peak flows which result in degraded fish habitat. Stormwater also washes off pollutants from roads and parking lots and carries these contaminants to streams.

By storing and holding stormwater runoff and releasing it slowly over time, peak flood flows are reduced, and sediments and pollutants in the water are given time to settle-out or absorb into the ground before they wind up in a stream or river. Surprisingly, only a small number of communities in the Pacific Northwest regulate stormwater.

The following stormwater management concepts are adapted and summarized from the Stormwater Management Manual for Western Washington (August, 2000 Draft). The information provided here is merely a rudimentary introduction to stormwater management in order to highlight its importance in maintaining water quality and reducing peak flood heights and velocities.

Stormwater Site Plans – Prior to permit approval, all projects should prepare a stormwater site plan for local review. In Western Washington, a 2,000 square foot threshold for impervious surfaces and a 7,000 square foot threshold for land disturbances trigger the

requirement for a stormwater management plan. This minimum development criteria captures most single-family home construction and their equivalent.

Stormwater Pollution Prevention during Construction – There are several methods to minimize erosion and keep sediments and other pollutants from leaving the site during the construction phase of a project:

Mark Clearing Limits – Prior to the start of any grading or clearing activities, the construction area should be clearly marked both in the field and on the site plans. This will give everyone a clear understanding of where the ground will be disturbed and where on-site impacts are to be contained.

Establish Construction Access – To limit off-site water and sediment movement, construction vehicle access should be limited to one route if possible. In addition, access points should be stabilized with crushed rock to minimize the tracking of sediment onto public roads.

Sediment Controls – An analysis of downstream flow rates should be conducted if changes to flow rates could impair stream conveyance, cause erosion or negatively impact aquatic habitat. The native top soil and natural vegetation should be retained to the maximum extent possible, and stormwater runoff from disturbed areas should pass through a sediment pond. Any stormwater detention facilities should be constructed prior to grading.

Stabilize Soils and Slope Protection – During construction, all exposed soils should be protected from the erosive forces of rain, flowing water, and wind by constructing silt fences around the site and by applying mulch, grass seed, plastic covering, or gravel directly to exposed soil. The velocity of run-off from slopes can be reduced through terracing and diversions, reducing slope steepness, and roughening the slope surface. Other requirements like check dams placed at regular intervals along a ditch can also reduce the amount of sediment that leaves the construction site.

Protect Inlets and Outlets – Storm drain inlets made operable during construction shall be protected so that stormwater runoff shall not enter the conveyance system without first being filtered or treated to remove sediment. All temporary on-site conveyance channels should be constructed to prevent erosion from velocity flows caused by rainstorms.

Pollution Control – Waste materials and demolition debris, as well as pH-modifying sources like bulk cement and fly-ash should not contaminate stormwater. Maintenance of vehicles like oil changes and hydraulic system drain downs should be conducted using spill prevention devices like drip pans.

Source Control of Pollution – All known and reasonable operational and structural source control Best Management Practices (BMPs) should be applied to all projects to prevent stormwater from coming into contact with pollutants.

Preserve Natural Drainage Systems and Outfalls – Creating new drainage patterns results in more site disturbance and creates more potential for erosion and sedimentation during and after construction. Therefore, natural drainage patterns should be maintained to the fullest extent because of the multiple stormwater benefits these systems provide. Erosion control at the downstream end of the discharge point should be incorporated as well.

On-Site Stormwater Management – Retaining stormwater on-site helps to re-create a more natural hydrologic discharge cycle by simulating the effects that natural ground cover would have by slowing the release of rainfall into nearby streams and rivers. On-site stormwater management techniques infiltrate, disperse, and retain stormwater runoff at the project site thereby reducing the amount of disruption to the natural hydrologic cycle of the watershed.

Runoff Treatment – Many communities have set standards for the percent of pollutants (e.g. suspended solids, phosphorus, oil, etc.) that must be removed to meet stormwater runoff treatment requirements. The purpose of runoff treatment is to reduce pollutant loads and concentrations in stormwater runoff using physical, biological, and chemical removal mechanisms to improve the water quality of the receiving stream. There are number of BMPs designed to treat stormwater runoff.

Flow Control – Maintaining or reducing existing erosion rates within streams is vital to protect fish habitat. Therefore, it is prudent to limit the peak rate of runoff from individual development sites to some allowable discharge threshold (e.g., 50% of the pre-developed condition 2 year, 24-hour design storm).

Wetlands Protection – Wetlands can be severely degraded by stormwater discharges from urban development due both to pollutants and to the disruption of natural flow rates into the wetland. If unchecked, sediments washed-off construction sites can fill in wetlands. Since wetlands provide multiple benefits including flood storage, groundwater recharge, and water purification, it is important that discharges to wetlands be contolled to protect the hydrologic and hydrophytic characteristics necessary to support the wetland.

• For more information see Appendix C

APPX. A | HIGHER FLOODPLAIN DEVELOPMENT STANDARDS

Excerpts of local community flood damage prevention ordinance language that exceeds miniumum NFIP requirements.

The following are excerpts of flood damage prevention ordinance language or city/county codes, from communities around the Northwest, that exceed the minimum floodplain development standards/requirements of the National Flood Insurance Program (NFIP). These are selected examples and do not include ordinance language from every community that has adopted increased floodplain development standards, nor do these examples include aquatic habitat protection provisions found in critical areas ordinances or other codes.

EXAMPLES FROM OREGON

CURRY COUNTY, OR — Floodplain Ordinance 98-1, Section 9.2-5

> Residential developments and commercial and industrial buildings… be elevated so that the bottom of the lowest horizontal supporting member is located no lower than two (2) feet above base flood elevation, with all space below the lowest supporting member open so as not to impede the flow of water…

FOREST GROVE, OR — Zoning Ordinance, Chapter 10-806

> Because the continued development in the regional floodplain will, by the cumulative effect of obstructions, cause an increase in flood frequencies, heights, velocities and flood losses by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately designed or

situated to protect them from flood damage, development allowed in flood-prone areas shall be limited to the following open space uses:

1. Agricultural uses such as farming, pasturing, grazing…
2. Industrial-commercial uses such as loading areas, parking areas, airport landing strips.
3. Recreational uses such as golf courses, tennis courts, driving ranges…
4. Residential uses such as lawns, gardens, parking areas and play areas.

Limited filling of Flood Prone Areas Allowed: The Planning Director or his designee may permit limited filling with compensatory excavation within flood-prone areas pursuant to the provisions of this zone, and provided that the applicant's engineer shall, in the Environmental Report, adequately demonstrate that the following conditions have been met:

1. The proposed fill will not have a serious tendency to change the flow of surface water during future flooding such as to cause a compounding of flood hazards or the direction or velocity of flood water flow;
2. The proposed fill will have a beneficial purpose, … and
3. The proposed fill will not result in serious environmental degradation…

Under no condition shall the Planning Director or his designee permit or allow to remain any fill within a designated regulatory floodway.

CITY OF GRESHAM, OR — Community Development Plan, Section 2.0522

Any proposal for development within the Flood Plain Special Purpose District shall be accompanied by documentation prepared by a registered civil engineer demonstrating to the satisfaction of the manager that the development:

a. Will not result in an increase in floodplain area on other properties; and
b. Will not result in an increase in erosive velocity of the stream that may cause channel scouring or reduced slope stability downstream of the development.

McMinnville City , OR — Code, Chapters 17.48.030 & 17.48.060

In an F-P (floodplain) zone, the following uses and their accessory uses are permitted:

a. Farming

b. Public park and recreation facility

c. Sewage pump station

In a F-P zone, the following limitations shall apply:

a. No residence shall be constructed except a residence as an accessory to a farm.

b. The first floor elevation of any structure for the shelter of humans shall be situated at least three feet above the established water crest elevation for a flood with a probability rate of one percent (base flood elevation).

Marion County, OR — Floodplain Overlay Zone, Chapter 19

Substantial Improvement – Any repair, reconstruction or improvement of a structure, the cost of which equals or exceeds 20 percent of the assessed value of the structure…

Chapter 19.13 (C): Prior to obtaining a building permit, the owner shall be required to sign and record in the deed records for the county a declaratory statement binding the land owner, and the landowner's successors in interest acknowledging that the property and the approved development are located in the floodplain.

Scappoose City, OR — Code, Chapter 17.84.170(A)(B)

No filling operations of any kind shall be allowed in the floodway.

No fill in floodway fringe areas shall be allowed unless the net effect of excavation and filling operations (on-site) constitutes no positive change in fill volume. An application for fill in the floodway fringe shall require implementation of special permit requirements of the development permit. - - - (17.84.200 B) In addition to the application requirements for the specific proposal, the development application shall contain a registered professional engineer's certification that the proposed project will not cause

a rise in base flood elevation during a one hundred-year event as it exists on the Flood Insurance Rate Map (FIRM) effective August 16, 1988 or create additions that would be detrimental to adjacent or neighboring properties.

CITY OF TILLAMOOK, OR — Supplement to the Tillamook Zoning Ordinance, Sec. 2, Ord. No. 971

…Should the proposed development plan include any filling, excavation or moving of soil, it must conform to paragraph B below. The aforesaid evaluation shall be stamped and signed by a professional engineer licensed by the Oregon Board of Engineering Examiners and qualified to conduct hydrologic and hydraulic evaluations. The City may engage at the developer's expense, a registered engineer to review proposals and reports submitted by developers as well as make recommendations to the City on the Development Plan's flood hazard impacts.

Development within areas subject to velocity waters shall be limited by the following restriction:

> No filling will be allowed nor building be allowed to be constructed unless it can be shown that from that development there will be no unreasonable increase in the velocity, height of water or diversion of water onto adjacent property.

Development in flood areas where the hazard is caused by "ponding" shall be limited by the following restrictions:

a. Filling or building activities shall not be allowed if there is an unreasonable displacement of water on adjacent property.

b. It may be required that an equivalent ponding area, equal in volume extent to the building site or earth fill, be created. Such ponding area shall be documented by a registered professional engineer and shall be properly identified upon a plot plan.

TILLAMOOK COUNTY, OR — Land Use Ordinance, Section 2.060

Substantial Improvement occurs when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. Substantial improvement applies to additions, reconstructions, rehabilitations, repetitive loss structures, and nonresidential construction at a cumulative 50% of market value, determined at the time of a building permit application.

CITY OF PORTLAND, OR — Title 33 Planning and Zoning, Chapter 33.535.100(A)

Johnson Creek, Fanno Creek, Tyron Creek, and Crystal Springs Creek FIRM Flood Zone A. These flood zones represent areas for which base flood elevations are not determined. The flood protection elevation shall be the base flood elevation plus two feet of freeboard. Base flood elevations shall be calculated in accordance with the next paragraph:

Unidentified Watercourse Flood Zones — These watercourses, generally draining one acre or more, are not identified in a Federal Insurance Study and may not be identified on the Water Features map. The flood protection elevation shall be the base flood elevation plus two feet of freeboard. The width of the floodway shall not be less than 15 feet. The floodway boundary, floodway fringe boundary, and flood protection elevation data shall be based upon watercourse geometry, slope, channel roughness, effect of obstructions, backwater and other factors which affect flood flow. The requisite flood hazard data, maps, and sections shall be obtained and developed by procedures approved by the Sewage System Administrator…. If pertinent hydrologic data and topographic data are not available, inaccurate, or outdated, and where substantial alterations or relocation's of a watercourse are involved, the Sewage System Administrator may require the permit applicant to secure a registered engineer and surveyor to develop and supply the requisite flood hazard data, maps, and sections.

THE CONFEDERATE TRIBES OF THE WARM SPRINGS RESERVATION

Ord #77, Section 5.0

New development in flood hazard areas shall be elevated to at least one foot above the estimated 500-year flood level. Substantial improvement or reconstruction of existing residential structures in flood hazard areas shall be elevated to at least ohe foot above the estimated 500-Year flood level. Substantial improvement or reconstruction of existing non-residential structures in flood hazard areas shall be allowed if floodproofing conditions are met or the improvement is elevated to at least one foot above the estimated 500-Year flood level.

EXAMPLES FROM IDAHO

BLAINE COUNTY, ID — Chapter 9-17-6(D)(E)

Prohibit Uses — The following activities are prohibited within specified stream setbacks:

1. Clearcutting, scraping with motorized equipment or other, removal of root systems or understory removal of more than thirty percent of the riparian area.
2. The removal of live vegetation between the ordinary high water marks
3. Any encroachment during construction

Dimensional Standards — Any buildable lot within this District (floodplain) shall be subject to the following minimum setbacks, subject to subsection E6 below, as measured from the ordinary high water mark:

1. Class 1 Stream: Seventy five foot (75') setback
2. Class 2 Stream: Fifty foot (50') setback
3. Class 3 Stream: Twenty-five foot (25') setback

E4: …Fill is limited to the area immediately around the building sufficient to protect the structure. Fill is permitted along the driveway alignment to allow the drive way to meet the garage elevation provided the conveyance of floodwaters is maintained.

E16(a) — Residential Construction: New construction and substantial improvement of any residential structure shall have the lowest portion of the floor system elevated two feet or more above the 100-year (base flood) elevation.

CITY OF BOISE, ID — Chapter 11-16-4.2

A. Greenbelt Setback Lands and Waters for the Boise River: The Greenbelt Setback Lands and Waters area is a minimum seventy foot (70') setback (measured landward) from the 6500 cfs setback line for all structures, driveways,

manicured landscaping, parking areas and shall be preserved for greenbelt purposes. These areas shall be maintained in the Boise River System to provide lands for the: protection of wildlife, streambank protection, flood storage, and protection of other recognized natural resource functions and values.

B. Heron Rookery Setbacks of 300 feet around identified Heron Rookeries

C. Eagle Perching, Feeding and Loafing Setback of 200 feet around identified areas.

D. (1) Tier 1 Waterway: A side channel with a width of less than 15 feet or with a flow of less than 5 cfs shall have a riparian setback of 20 feet. (2) Tier 2 Waterway: A side channel with a width of greater than 15 feet or with a flow of between 5 cfs and 150 cfs shall have a riparian setback of not less than 25 feet.

CITY OF EAGLE, ID — Title 10, Flood Control, Chapter 1

Section A(2): New construction and substantial improvement of any residential (and commercial) structure shall have the lowest floor, including basement, elevated to a minimum of two feet (2') above the base flood elevation.

Section D(4): All building shall be set back a minimum of fifty feet (50') from the floodway line.

Section D(5): Where setback from the floodway line is less than one hundred feet (100') but more than fifty feet (50'), measures shall be designed to protect a fifty foot (50') wide access strip for emergency construction equipment.

Section F — Fill Requirements for fill placed in the floodplain:

1. Development within the area of special flood hazard shall result in no net loss in natural storage. Grading plans shall show that existing natural floodwater storage volume in the floodplain, as bounded by the existing surface topography and the base flood elevation surface, shall not be reduced from the current quantity. Post-development storage volumes will be calculated from the post-development flood elevation for the base flood event. Depressions which will be filled with ground water and sections of the floodplain which are restricted from flood water conveyance due to roads built above the base flood elevation shall not be considered when determining storage volumes.

2. The slope of fill adjacent to the floodway setback line, hereinafter referred to as the floodway boundary slope, shall not be steeper than five (5) horizontal to one vertical.

3. The floodway boundary slope shall be maintained in groomed perennial turf or equivalent low ground-cover vegetation not taller than twelve inches (12") to provide protection from erosion.

BENEWAH COUNTY, ID — Ordinance No. 50

(10): …Solid perimeter foundation walls or other types of enclosures below the base flood elevation (BFE) are strictly prohibited except:

a. Crawl spaces that comply with Paragraph 1-9 above and contain no interior vertical clearance of greater than four (4) feet as measured from the floor or soil to the bottom of the next above floor joists.

b. Garages and storage areas that comply with Paragraph 1-9 above and do not have any doors of any kind other than vertically opening garage doors of at least eight (8) feet in width, and do not contain any interior stairs, elevators or ladders or other devices, form or design which provides interior access or potential interior access between below BFE and above BFE areas of any structure. Exterior access from below BFE to above BFE areas must remain open and may not be enclosed by any means in whole or in part except that stairs may have railings and may be protected from the elements by a roof only.

KOOTENAI COUNTY, ID — Ordinance Nos. 283 and 285

Ord. 283, Section 8 Disturbance Restrictions:

A. Stream Protection Zones: During and after construction operations, stream beds and streamside vegetation shall be protected to leave them in the most natural condition possible to maintain water quality and aquatic habitat.

1. Protection Zone Dimensions:

a. Class I Stream Protection Zone - The area encompassed by a slope distance of 75 feet on each side of the high water marks.

b. Class II Stream Protection Zone - The area encompassed by a minimum slope distance of 30 feet on each side of the high water marks of a Class II stream.

c. Naturally Occurring Drainage Swale Protection Zone - The area encompassed by a minimum slope distance of 5 feet on each side of the top of a naturally occurring drainage swale.

2. **Protection Zone Restrictions:**

   a. No mechanical ground disturbance shall be permitted within the protection zone except at identified and permitted crossings. When disturbance is necessary, across or inside the Protection Zone, it shall be done in such a manner as to minimize streambank vegetation and channel disturbance. The extent of such disturbances shall be clearly indicated in the approved plans.

   b. Large organic debris, shading, wildlife cover, and water filtering effects of vegetation shall be maintained along streams as outlined in the Idaho Forest Practices Act.

Ord. 285, Section 4

F. Subdivision Proposals: All lots created after the effective date of this Ordinance shall have a building site that is a minimum of 4000 square feet… Such building sites shall not be created by placing fill within the (Special) Flood Hazard Area.

EXAMPLES FROM WASHINGTON

LEWIS COUNTY, WA — Floodplain Ordinance 1145

Any fill or materials to be deposited within special flood hazard areas must have a beneficial purpose and the amount thereof not greater than is necessary to achieve that purpose, as demonstrated by a plan submitted by the legal owner(s) showing the uses to which the filled land will be put and the final dimensions of the proposed fill or other materials.

Fill or materials must be obtained from the same site, to the extent practicable. Where such fill or materials cannot be so obtained from the same site, fill or materials must be obtained, to the extent possible, both within the immediate vicinity and within the boundaries of the special flood hazard area.

CITY OF BURLINGTON, WA — Ordinance 119115.15.100

A. Development other than the following is prohibited in the special flood risk zone:

1. Developments wherein any floodwater blockage effect is at least equally balanced by excavation or removal of structures elsewhere in the special flood risk zone such that, the overall capacity to convey floodwater is not reduced. . .

2. All structures shall be securely anchored on piling, columns, or foundation walls oriented to the axis of the flow path. Said support elements shall be certified by a registered professional engineer or architect as capable of withstanding all applied loads of the one-hundred year flood flow.

B. Regardless of method of construction, operation, development, substantial improvement, or expansion of residential health care facilities is prohibited in the special flood risk zone.

KING COUNTY, WA — Floodplain Ordinance 221A.24.240 - 221A.24.275

221A.24.240 — Flood fringe development standards and permitted alterations: Development proposals on sites within the flood fringe area shall meet the following requirements:

A. Development proposals shall not reduce the effective base flood storage volume of the floodplain. Grading or other activity which would reduce the effective storage volume shall be mitigated by creating compensatory storage on the site or off the site if legal arrangements can be made to assure that the effective compensatory storage volume will be preserved over time. Grading for contruction of livestock manure storage facilities to control non-point source water pollution designed to the standards of and approved by the King County Conservation District is exempt from this compensatory storage requirement.

B. All elevated construction shall be designed and certified by a professional structural engineer licensed by the State of Washington and shall be approved by King County prior to construction.

C. Subdivision, short subdivisions and binding site plans shall meet the following requirements:

1. new building lots shall contain 5,000 square feet or more of buildable land outside the zero-rise floodway, and building setback areas shall be shown on the face of the plat to restrict permanent structures to this buildable area;

2. base flood data and flood hazard notes shall be shown on the face of the recorded subdivision, short subdivision or binding site plan including, but not limited to, the base flood elevation, required flood protection elevations and the boundaries of the floodplain and the zero-rise floodway, if determined; and

3. the following notice shall also be shown on the face of the recorded subdivision, short subdivision or binding site plan for all affected lots.

D. Utilities shall meet the following requirements:

1. new and replacement utilities including, but not limited to, sewage treatment facilities shall be floodproofed to or elevated above the flood protection elevation (FPF is one-foot above BFE)

2. new on-site sewage disposal systems shall be, to the extent possible, located outside the limits of the base flood elevation. The installation of new on-site sewage disposal systems in the flood fringe may be allowed if no feasible alternative site is available.

3. sewage and agricultural waste storage facilities shall be flood-proofed to the flood protection elevation.

4. above-ground utility transmission lines, other than electric transmission lines, shall only be allowed for the transport of non-hazardous substances; and

5. buried utility transmission lines transporting hazardous substances shall be buried at a minimum depth of four feet below the maximum depth of scour for the base flood; as predicted by a professional civil engineer licensed by the State of Washington, and shall achieve sufficient negative buoyancy so that any potential for flotation or upward migration is eliminated.

24A.24.250 — Zero-rise floodway development standards & permitted alterations:

A. The requirements which apply to the flood fringe shall also apply to the zero-rise floodway. The more restrictive requirements shall apply where there is a conflict.

B. A development proposal including, but not limited to, new or reconstructed structures shall not cause any increase in the base flood elevation unless the following requirements are met:

1. amendments to the Flood Insurance Rate Map are adopted by FEMA, in accordance with 44 CFR, to incorporate the increase in the base flood elevation; and

2. appropriate legal documents are prepared in which all property owners affected by the increased flood elevations consent to the impacts on their property. These documents shall be filed with the title of record for the affected properties.

C. All temporary structures or substances hazardous to public health, safety and welfare, except for hazardous household substances or consumer projects containing hazardous substances, shall be removed for the zero-rise floodway during the flood season from September 30 to May 1.

21A.24.260 — FEMA floodway development standards and permitted alterations:

A. The requirements which apply to the zero-rise floodway shall also apply to the FEMA floodway. The more restrictive requirements shall apply where there is a conflict.

B. A development proposal including, but not limited to, new or reconstructed structures shall not cause any increase in the base flood elevation.

C. New residential or nonresidential structures are prohibited within the FEMA floodway.

21A.24.275 — Channel relocation and stream meander areas: No structure shall be allowed which would be at risk due to channel relocation or stream meander until the promulgation of a public rule.

PIERCE COUNTY, WA — Ordinance 90-132

Deep and/or fast-flowing water is considered to be a floodway. (A combination of water depth and velocity is shown on a graph as Exhibit B to the ordinance).

All subdivision shall have their access road(s) and public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.

Residential construction, non residential construction, and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the lowest floor, including basement, elevated one foot above the base flood elevation and two feet above base flood elevation for structures adjacent to major water courses.

Access Requirements: Private roads and access easements, where allowed, to all new construction or development shall be elevated to within one-half foot of the base flood elevation when water velocities are two feet per second or less. All other private roads and all public or future public roads must be armored and elevated one foot above the base flood elevation. Parking lots are not considered as private roads or access easements.

SKAGIT COUNTY, WA — Flood Damage Prevention Ordinance, Chapter 15.20.190(4)

Construction of new critical facilities shall be to the extent possible, located outside the limits of the one hundred floodplain as identified on the community's FIRM. Construction of new critical facilities shall be permissible within the one hundred year floodplain if no feasible alternative site is available. Critical facilities constructed within the one hundred year frequency floodplain shall have the lowest floor elevated to

three or more feet above the level of the base one hundred year frequency flood. Floodproofing and sealing measures shall be taken to ensure that toxic substances will not be displaced by or released into floodwaters.

CITY OF SNOQUALMIE, WA — Flood Hazards Regulations Chapter 15.12

15.12.040 — Definitions: With respect to a flood damaged residential structure, "substantial improvement" means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds ten percent of the market value of the structure:

a. before the improvement or repair is started; or

b. before the flood damage occurred.

15.12.160 — Specific Standards:

A. No fill shall be permitted except where it can be shown that it is uneconomical or not structurally possible to construct the structure otherwise and provision has been made on the subject property to balance the capacity to store floodwaters and accommodate potential surface flow in an amount equal to the amount of floodwater likely to be displaced by the fill, provided, provision may be made subject to Section 15.12.180 to balance the capacity to store floodwaters off the subject property, when it can be demonstrated that the property upon which the balancing capacity is being created is located such that no increase in the base flood discharge will result. Fill shall be of clean natural soils only. Care shall be taken to prevent erosion and surface runoff to adjacent properties. All fill shall be compacted at the time of placement.

APPX. B | FLOOD HAZARD PREVENTION & FISH HABITAT PROTECTION

A model ordinance
Developed by FEMA - Region 10
Revised February, 2002

This ordinance combines the minimum NFIP requirements found in the FEMA model Flood Hazard Prevention Ordinance (marked with a normal font) with other regulatory provisions designed to protect aquatic and riparian habitat (marked in italics).

SECTION 1

Statutory Authorization, Findings of Fact, Purpose, & Methods For Reducing Flood Losses

1.1 STATUTORY AUTHORIZATION

The Legislature of the State of _____ has delegated the responsibility to local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. Therefore, the _____ of, _____ does ordain as follows:

1.2 FINDINGS OF FACT

A. The flood hazard areas are subject to periodic inundation which results in loss of life and property, health, and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.

B. These flood losses are caused by placing capital development and infrastructure on areas prone to inundation the cumulative effect of obstructions in areas of special flood hazards, which increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately flood proofed, elevated, or otherwise protected from flood damage also contribute to the flood loss.

C. Floodplain and stream connectivity is a major element in maintaining healthy riparian habitat and off-channel habitats for the survival of fish species and conveyance of floodwaters in the northwest. If river, floodplains and other systems are not viewed holistically as biological, geomorphological units, this can lead to serious degradation of habitat and increase flood hazards which, in turn, can contribute to listing of various fish species as threatened or endangered and result in extraordinary public expenditures for flood protection and relief.

1.3 PURPOSE

It is the purpose of this ordinance to promote the public health, safety, and general welfare, *to maintain streams and floodplains in their natural state to the maximum extent possible so they support healthy biological ecosystems*, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

A. To protect human life and health;

B. To minimize expenditure of public money for and costly flood control projects and flood damage repair;

C. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

D. To minimize prolonged business interruptions;

E. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard;

F. To help provide maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;

G. To ensure that potential buyers are notified that property is in an area of special flood hazard; and,

H. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

I. To assure that flood loss reduction measures under the NFIP protect are consistent with retaining natural floodplain functions related to protecting riparian habitat and the natural processes that create and maintain habitat for fish.

J. To assure no net loss of hydraulic, geomorphic, and ecological functions of floodplains.

1.4 METHODS OF REDUCING FLOOD LOSSES

In order to accomplish its purposes, this ordinance includes methods and provisions for:

A. Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;

B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction or relocated and possibly relocating uses outside of the floodplain;

C. Controlling the alteration of natural flood plains, stream channels, and natural protective barriers, which help accommodate or channel flood waters;

D. Controlling filling, grading, dredging, and other development which may increase flood damage *and alter beneficial natural stream processes; and*

E. Preventing or regulating the construction of flood barriers that would which will unnaturally divert floodwaters in such as way as to, *block natural channel migration*, or may increase flood hazards in other areas.

SECTION 2

Definitions

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application.

2.1 APPEAL

”Appeal” means a request for a review of the interpretation of any provision of this ordinance or a request for a variance.

2.2 AREA OF SHALLOW FLOODING

“Area of Shallow Flooding” means a designated AO, or AH Zone on the Flood Insurance Rate Map (FIRM). The base flood depths range from one to three feet; a clearly defined channel does not exist; the path of flooding is unpredictable and

indeterminate; and, velocity flow may be evident. AO is characterized as sheet flow and AH indicates ponding.

2.3 AREA OF SPECIAL FLOOD HAZARD

"Area of Special Flood Hazard" means the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. Designation on maps always includes the letters A or V.

2.4 BASE FLOOD

"Base Flood" means the flood having a one percent chance of being equaled or exceeded in any given year. Also referred to as the "100-year flood." Designation on maps always includes the letters A or V.

2.5 BASEMENT

"Basement" means any area of the building having its floor subgrade (below ground level) on all sides.

2.6 BREAKAWAY WALL

"Breakaway Wall" means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.

2.7 CHANNEL MIGRATION ZONE

"Channel Migration Zone" means the lateral extent of likely movement along a stream reach during the next one hundred years with evidence of active stream channel movement over the past one hundred years. Evidence of active movement can be provided from aerial photos or specific channel and valley bottom characteristics. A time frame of one hundred years was chosen because aerial photos and field evidence can be used to evaluate movement in this time frame. Also, this time span typically represents the time it takes to grow mature trees that can provide functional large woody

debris to most streams. In large meandering rivers a more detailed analysis can be conducted to relate bank erosion processes and the time required to grow trees that function as stable large woody debris.

With the exception of shorelands in or meeting the criteria for the "natural" and "rural conservancy" environments, areas separated from the active channel by legally existing artificial channel constraints that limit bank erosion and channel avulsion without hydraulic connections shall not be considered within the CMZ. All areas, including areas within the "natural" and "rural conservancy" environments, separated from the natural channel by legally existing structures designed to withstand the 100-year flood shall not be considered within the CMZ. A tributary stream or other hydraulic connection allowing PTE species fish passage draining through a dike or other constricting structure shall be considered part of the CMZ.

2.8 COASTAL HIGH HAZARD AREA

"Coastal High Hazard Area" means an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The area is designated on the FIRM as Zone V1-30, VE or V.

2.9 CRITICAL FACILITY

"Critical Facility" means a facility for which even a slight chance of flooding might be too great. Critical facilities include, but are not limited to schools, nursing homes, hospitals, police, fire and emergency response installations, installations which produce, use or store hazardous materials or hazardous waste. Critical facilities should not be sited in flood hazard zones, since history tells us that we cannot guarantee protection from flooding.

2.10 DEVELOPMENT

"Development" means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, storage of equipment or materials, *or any other activity which results in the removal of substantial amounts of vegetation or in the alteration of natural site characteristics located within the area of special flood hazard.*

2.11 ELEVATED BUILDING

"Elevated Building" means for insurance purposes, a no basement building, which has its lowest elevated floor, raised above ground level by foundation walls, shear walls, post, piers, pilings, or columns.

2.12 EXISTING MANUFACTURED HOME, PARK, OR SUBDIVISION

"Existing Manufactured Home, Park, or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the adopted floodplain management regulations.

2.13 EXPANSION TO AN EXISTING MANUFACTURED HOME, PARK, OR SUBDIVISION

"Expansion to an Existing Manufactured Home, Park, or Subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

2.14 FLOOD OR FLOODING

"Flood" or "Flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from:

A. The overflow of inland or tidal waters and/ or

B. The unusual and rapid accumulation of runoff of surface waters from any source.

2.15 FLOOD INSURANCE RATE MAP (FIRM).

"Flood Insurance Rate Map (FIRM)" means the official map on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

2.16 FLOOD INSURANCE STUDY

"Flood Insurance Study" means the official report provided by the Federal Insurance Administration that includes flood profiles, the Flood Boundary-Floodway Map, and the water surface elevation of the base flood.

2.17 FLOODWAY

"Floodway" means the channel of a river or other watercourse and the adjacent and areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot

2.18 HABITAT

"Habitat" means the combination of essential elements in the ecological function of riverine and marine shoreline systems that, for threatened, endangered, and priority species of fish, included but are not limited to adequate:

- *substrate*
- *water quantity*
- *water velocity*
- *food (juveniles only)*
- *safe passage conditions*
- *water quality*
- *water temperature*
- *cover/shelter*
- *riparian vegetation*

Other elements may include an essential element in ecological functions of riverine and marine shoreline systems that, for threatened, endangered and priority species of fish, includes, but is not limited to, shade and moderation of water temperature, streambank stabilization, shoreline protection, riparian corridors, large woody debris (lwd), lwd recruitment processes, a natural range of variability of flows, and off-channel rearing areas control of sediment input from surface erosion, regulation of nutrient and pollutant inputs to streams, litter and woody debris recruitment, refugia, and food production.

2.19 HYPORHEIC ZONE

"Hyporheic Zone" is the saturated zone located beneath and adjacent to streams that contains some portion of surface waters and means the area of subsurface flow between surface water and the water table; it is generally above the ground water level, serves as a filter for nutrients and maintains high water quality. Floodplains provide course beds of alluvial sediments through which these subsurface river flows pass, much like a filter, contributing to habitat.

2.20 IMPERVIOUS SURFACE

"Impervious Surface" means any material or land alteration (i.e., clearing, grading, etc.) that reduces or prevents absorption of storm water into previously undeveloped land. That hard surface area which either prevents or retards the entry of water into the soil, water that had entered under natural conditions prior to development; and/or that hard surface area that causes water to run off the surface in greater quantities or at an increased rate of flow from that present under natural conditions prior to development. Common impervious surfaces include, but are not limited to: roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, and packed earthen materials.

2.21 LOWEST FLOOR

"Lowest Floor" means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this ordinance found at Section 5.2.1(B).

2.22 MANUFACTURED HOME

"Manufactured Home" means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle."

2.23 MANUFACTURED HOME, PARK, OR SUBDIVISION

"Manufactured Home, Park, or Subdivision" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

2.24 NEW CONSTRUCTION

"New Construction" means structures for which the "start of construction" commenced on or after the effective date of this ordinance.

2.25 NEW MANUFACTURED HOME, PARK, OR SUBDIVISION

"New Manufactured Home, Park, or Subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of adopted floodplain management regulations.

2.26 PROTECTED AREA

"Protected Area" means any land and vegetation that lies within the Riparian Buffer Zone, channel migration zone, and/or floodplain, whichever is more restrictive.

2.27 QUALIFIED PROFESSIONAL

"Qualified Professional" means a person with experience and training in fish and wildlife issues and/or river systems; who has experience analyzing fish and wildlife habitats and their functions and values, impacts to the habitats, channel morphology, and mitigation; who derives his/her livelihood from employment as a habitat management consultant or fisheries biologist, or who functions in these areas but as a fluvial geo morphologist. Qualifications include: [1] a B.S. or B.A. or equivalent degree in biology,environmental studies, fisheries, geomorphology or related field, and two years of related work experience, or; [2] five years of related work experience.

2.28 RECREATIONAL VEHICLE

"Recreational Vehicle" means a vehicle, which is:

A. Built on a single chassis;

B. 400 square feet or less when measured at the largest horizontal projection;

C. Designed to be self-propelled or permanently tow able by a light duty truck; and

D. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

2.29 RIPARIAN BUFFER ZONE

"Riparian Buffer Zone" means an overlay zone that encompasses all land within distances specified in the ordinance on all watercourses and on either side of all streams measured as a line extending perpendicularly ordinary high water, and within which vegetation retention, pervious surfaces and special management practices are required for the protection of water quality, hydrologic functions, and fish and wildlife habitat. The federal services consider riparian buffer zones as the land adjacent to a water body including off channel areas equal to one site-potential tree height measured perpendicularly from the bank full flow.

2.30 START OF CONSTRUCTION

"Start of Construction" includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

2.31 STRUCTURE

"Structure" means a walled and roofed building including a gas or liquid storage tank that is principally above ground.

2.32 SUBSTANTIAL DAMAGE

"Substantial Damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

2.33 SUBSTANTIAL IMPROVEMENT

"Substantial Improvement" means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure either:

A. Before the improvement or repair is started; or

B. If the structure has been damaged and is being restored, before the damage occurred. For the purposes of this definition "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure.

The term does not, however, include:

A. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions;

B. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

2.34 VARIANCE

"Variance" means a grant of relief from the requirements of this ordinance, which permits construction in a manner that would otherwise be prohibited by this ordinance.

2.35 WATER DEPENDENT

"Water Dependent" means a structure or use for commerce or industry, which cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations. *A use that can be carried out only on, in or adjacent to water areas because the use requires access to the water body for water borne transportation, recreation, energy production or source of water. Examples include ship cargo terminal loading areas, fishing, ferry and passenger terminals, barge loading facilities, ship building and dry docking, marinas, aquaculture, float plane facilities, hydroelectric dams, surface water intake, and sewer outfalls.*

2.36 WATER TYPING SYSTEM

"Water Typing System" means a system for classifying streams according to their size and fish habitat characteristics. The system is based generally on the Washington Department of Natural Resources classification system, and includes the following types:

A. *Type 1 includes all major salmonid-bearing streams that are mapped on the FEMA Flood Insurance Rate Maps. In Washington State, this includes all waters inventoried as "shorelines of the State."*

B. *Type 2 includes segments of natural waters not classified as Type 1 that are salmonid-bearing, and are used by substantial numbers of fish for spawning, rearing or migration. Waters are presumed to have highly significant fish populations if they include stream segments having a defined channel 20 feet or greater within the bank full width, are lakes, ponds or impoundments having a surface area of one acre or greater, or are waters used by salmonids for off-channel habitat.*

C. *Type 3 includes segments of natural waters, which are not classified as Type 1 or 2, and have a moderate to slight fish, wildlife and human use. These waters typically have a defined channel of 5 to 20 feet within the bank full width, or are ponds or impoundments having a surface area of less than one acre.*

D. *Type 4 includes segments of natural waters with bank full widths of defined channels that are not Type 1, 2 or 3 waters, are typically less than 5 feet in width and which are perennial waters of nonfish-bearing streams.*

E. *Type 5 includes segments of natural waters with bank full widths of defined channels that are not Types 1-4, are less than 5' wide and are seasonal nonfish-bearing streams.*

SECTION 3
General Provisions

3.1 LANDS TO WHICH THIS ORDINANCE APPLIES

This ordinance shall apply to all areas of special flood hazards within the jurisdiction of _____.

3.2 BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD

The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for_____ (community name) _____ " dated _____, 19__, and any revisions thereto,

with an accompanying Flood Insurance Rate Map (FIRM), and any revisions thereto, are hereby adopted by reference and declared to be a part of this ordinance. The Flood Insurance Study and the FIRM are on file at _____(community address)_____. The best available information for flood hazard area identification as outlined in Section 4.3.2 shall be the basis for regulation until a new FIRM is issued which incorporates the data utilized under Section 4.3.2. *Any flood information that is more restrictive or detailed than the FEMA data can be used for flood loss reduction and/or fisheries habitat management purposes, including data on channel migration, more restrictive floodways, maps showing future build-out conditions, specific maps from watershed or related studies that show riparian habitat areas, or similar maps.*

3.3 PENALTIES FOR NONCOMPLIANCE

No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violations of the provisions of this ordinance by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a misdemeanor. Any person who violates this ordinance or fails to comply with any of its requirements shall upon conviction thereof be fined not more than _____ or imprisoned for not more than _____ days, or both, for each violation, and in addition shall pay all costs and expenses involved in the case. Nothing herein contained shall prevent the _____ from taking such other lawful action as is necessary to prevent or remedy any violation. You may want to include some language here about the potential consequences if the action also “takes” a species listed under the Endangered Species Act.

3.4 ABROGATION AND GREATER RESTRICTIONS

This ordinance is not intended to repeal, abrogate, or impair any existing easeents, covenants, or deed restrictions. However, where this ordinance and an other ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

3.5 INTERPRETATION

In the interpretation and application of this ordinance, all provisions shall be:

A. Considered as minimum requirements;

B. Liberally construed in favor of the governing body; and,

C. Deemed neither to limit nor repeal any other powers granted under state statutes.

3.6 WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by this ordinance is considered reason able or regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This ordinance does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This ordinance shall not create liability on the part of _____, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

SECTION 4

Administration

4.1 ESTABLISHMENT OF DEVELOPMENT PERMIT

4.1.1. Development Permit Required

A development permit shall be obtained before construction or development begins within any area of special flood hazard established in Section 3.2. The permit shall be for all structures including manufactured homes, as set forth in the "DEFINITIONS," and for all development including fill and other activities, also as set forth in the "DEFINITIONS."

4.1.2. Application for Development Permit

Application for a development permit shall be made on forms furnished by the community and may include, but not be limited to, plans in duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities, and the location of the foregoing. Specifically, the following information is required:

A. Elevation in relation to mean sea level, of the lowest floor (including basement) of all structures;

B. Elevation in relation to mean sea level to which any structure has been flood proofed;

C. Certification by a registered professional engineer or architect that the flood proofing methods for any nonresidential structure meet the flood proofing criteria in Section 5.2.2;

D. Description of the extent to which a watercourse will be altered or relocated as a result of proposed development; and

E. Identification of the Riparian Buffer Zone, CMZ, and/or floodplain on the site map and location of the building site location in relation to the Riparian Buffer Zone these areas.

4.2 DESIGNATION OF THE LOCAL ADMINISTRATOR

The (local administrator) is hereby appointed to administer and implement this ordinance by granting or denying development permit applications in accordance with its provisions.

4.3 DUTIES AND RESPONSIBILITIES OF THE LOCAL ADMINISTRATOR

Duties of the (local administrator) shall include, but not be limited to:

4.3.1. Permit Review

A. Review all development permits to determine that the permit requirements of this ordinance have been satisfied.

B. Review all development permits to determine that all necessary permits have been obtained from those Federal, State, or local governmental agencies from which prior approval is required, including those local, State or Federal permits that may be required to assure compliance with the Endangered Species Act or other appropriate fisheries regulations. If Federal funding is involved, the applicant shall furnish evidence from the Federal agency assuring compliance with the Endangered Species Act.

C. Review all development permits to determine if the proposed development is located in the floodway, *or in the protected area of the Riparian Buffer Zone.* If located in the floodway, assure that the encroachment provisions of Section 5.4(A) are met. *If located in the protected area, assure that allprovisions related to the Riparian Buffer Zone at Section 5.5 are met.*

D. The applicant shall be notified that the (city, county) has reviewed the permit for compliance with floodplain management and riparian buffer zone requirements of this ordinance, but that it has not been reviewed for compliance with the Endangered Species Act. The decision does not conclude that activities allowed will or will not conflict with provisions of the Federal ESA, and should not be construed to authorize any activity that will conflict with or violate the ESA. The applicant must ensure that the approved activities are designed, constructed, operated and maintained in a manner that complies with the ESA.

E. (OPTIONAL) The applicant shall be notified that during review of this development proposal, it was determined that this property contains land within the Riparian Buffer Zone, which is an area that must remain in an undisturbed condition in which only native plants are allowed to grow, and that the applicant is required by this ordinance to record a Notice on Title on the property before a permit may be issued.

F. In an effort to site structures as far away from the watercourse and protected area as possible, the applicant will be apprised of the elevations of the 10-year and 50-year floods in detailed study areas at the same time that the (city, county) provides the 100-year elevation as a part of the permit review. The applicant, in addition to plotting the 100-year elevation near the building site, will also plot the 10 and 50-year elevations on the land. The 100-year flood has a 26% chance of occurring in a 30-year period, while the 50-year flood has almost twice that chance (45%) and the 10-year flood has a 96% chance, i.e.,

it will almost certainly happen at least once in the 30-year period. The purpose is to show the applicant the significantly lower risk of placing the structure further away from the watercourse.

4.3.2. Use of Other Base Flood Data (In A and V Zones)

When base flood elevation data has not been provided (A and V Zones) in accordance with Section 3.2, BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD, the (local administrator) shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a Federal, State or other source, in order to administer Sections 5.2, SPECIFIC STANDARDS, and 5.4 FLOODWAYS.

4.3.3. Information to be Obtained and Maintained

A. Where base flood elevation data is provided through the Flood Insurance Study, FIRM, or required as in Section 4.3.2, obtain and record the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures, and whether or not the structure contains a basement.

B. For all new or substantially improved flood proofed structures where base flood elevation data is provided through the Flood Insurance Study, FIRM, or as required in Section 4.3.2:

   i. Obtain and record the elevation (in relation to mean sea level) to which the structure was flood proofed.

   ii. Maintain the flood proofing certifications required in Section 4.1.2(C).

C. Maintain for public inspection all records pertaining to the provisions of this ordinance.

4.3.4. Alterations of Watercourses

A. Notify adjacent communities and the Department of Ecology prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration. Generally, stream relocations should not be allowed unless the primary function of the action is to restore ecological functioning.

B. Require that maintenance be provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished. *If the maintenance program calls for future cutting of planted native vegetation used in performing the alteration, the system shall be oversized at the time of construction to compensate for said vegetation growth or any other natural factor that may need future maintenance.*

C. Alterations and relocations, including stabilization projects, shall not degrade fish habitat or the physical processes that create and maintain habitat, or cause increased flood hazard or erosion to other properties and shall be subject to the following provisions:

   i. Bridges shall be used instead of culverts on all Type 1 streams, and shall meet fish habitat requirements of the State Department of Fish and Wildlife.

ii. Any culverts that are used on fish-bearing streams must be arch/bottomless culverts or provide comparable fish protection, and must meet fish habitat requirements of the State Department of Fish and Wildlife Design Manual for Culverts, or more restrictive local standards.

iii. Bridges or other crossings must allow for uninterrupted downstream movement of wood and gravel, must be as close to perpendicular to the stream as possible, be designed to minimize fill and to pass 100-year flood flows allow full channel migration and conveyance of flood water (100 year flood flows).

iv. Alterations must maintain natural meander patterns, channel complexity and floodplain connectivity. Where feasible, such characteristics must be restored as part of the alteration; if not feasible because the impact is minimal, the applicant shall pay a fee in lieu into a fund the (city, county) can use on the stream, adjacent to the site, where the impact would be greater.

v. The applicant shall identify the channel migration zone for the stream at the project site and for a reasonable reach upstream and downstream of the site, and shall not undertake actions as part of the alteration that would in any way inhibit movement of the channel.

vi. Wherever feasible as part of an alteration, culverts that do not meet fish habitat requirements must be removed or replaced as part of the project.

vii. Alteration projects shall not result in blockage of side channels. If at the time of the alteration there are known barriers to fish passage into side channels, they shall be removed.

viii. If man-made side channels are part of an alteration project for irrigation, industrial or similar purposes, they shall be adequately screened, per requirements of the State Department of Fish and Wildlife's Salmonid Screening Manual, or more restrictive local standards.

ix. For any alteration of a salmonid-bearing stream whose channel is subject to migration, bioengineered ("soft") armoring of stream banks is required. For alteration of other fish-bearing streams, soft armoring of stream banks is required wherever possible, in order to allow for woody debris recruitment, gravels for spawning and creation of side channels. Whatever technique is used must be designed in accordance with the State Department of Fish and Wildlife's Stream Bank Guidelines, or more restrictive local standards. Note: this paragraph makes it seem like the only solution to altering a stream is to construct bioengineered armoring. Actually, the solution may be not to armor it at all. See the standards developed in the Shoreline Guidelines on bank stabilization.

4.3.5 Interpretation of FIRM Boundaries

Make interpretations where needed, as to exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in Section 4.4.

NOTE - If you do not include Section 4.4 (Variance Procedure), end the above sentence after the word "interpretation" and add the following sentence: "Such appeals shall be granted consistent with the standards of Section 60.6 of the Rules and Regulations of the National Flood Insurance Program (44 CFR 59-76)."

4.4 VARIANCE PROCEDURE

4.4.1 Appeal Board

A. The _____ as established by _____ shall hear and decide appeals and requests for variances from the requirements of this ordinance.

B. The _____ shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the _____ in the enforcement or administration of this ordinance.

C. Those aggrieved by the decision of the _____ , or any taxpayer, may appeal such decision to the _____ , as provided in _____.

D. In passing upon such applications, the _____ shall consider all technical evaluations, all relevant factors, standards specified in other sections of this ordinance, and:

i. The danger that materials may be swept onto other lands to the injury of others;

ii. The danger to life and property due to flooding or erosion damage;

iii. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

iv. The importance of the services provided by the proposed facility to the community;

v. The necessity to the facility of a waterfront location, where applicable;

vi. The availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;

vii. The compatibility of the proposed use with existing and anticipated development;

viii. The relationship of the proposed use to the comprehensive plan and flood plain management program for that area;

ix. The safety of access to the property in times of flood for ordinary and emergency vehicles;

x. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site; and,

xi. The costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.

xii. Impacts to habitat and natural river processes that influence habitat.

E. Upon consideration of the factors of Section 4.4.1(D) and the purposes of this ordinance, the _____ may attach such conditions to the granting of variances, as it deems necessary to further the purposes of this ordinance.

F. The _____ shall maintain the records of all appeal actions and report any variances to the Federal Insurance Administration upon request.

4.4.2. Conditions for Variances.

A. Generally, the only condition under which a variance from the elevation standard may be issued is for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (i-xi) in Section 4.4.1(D) have been fully considered. As the lot size increases the technical justification required for issuing the variance increases.

B. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the State Inventory of Historic Places, without regard to the procedures set forth in this section.

C. Variances shall not be issued within a designated floodway if any increase in flood levels during the base flood discharge would result.

D. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

E. Variances shall only be issued upon:

   i. A showing of good and sufficient cause;

   ii. A determination that failure to grant the variance would result in exceptional hardship to the applicant;

   iii. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

F. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece of property; they are not personal in nature and do not pertain to the structure, its inhabitants, economic or financial circumstances. They primarily address small lots in densely populated residential neighborhoods. As such, variances from the flood elevations should be quite rare.

G. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of flood proofing than watertight or dry-flood proofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except 4.4-2(1), and otherwise complies with Sections 5.1.1, 5.1.3, and 5.1-4 of the GENERAL STANDARDS.

H. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

SECTION 5

Provisions for Flood Hazard Reduction

5.1. GENERAL STANDARDS

In all areas of special flood hazards, the following standards are required:

5.1.1. Anchoring

A. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.

B. All manufactured homes must likewise be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (Reference FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques).

5.1.2. Construction Materials and Methods

A. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

B. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage. *If a lot has a buildable site out of the floodplain, new construction shall be directed to that area. For buildings that have no option and must be built in the floodplain, methods and practices include commonly-accepted measures, such as placing structures on the highest land on the lot, orienting structures parallel to flow rather than perpendicular, and siting structures as far away from the watercourse and protected area as possible (see Section 4.3.1[F]). Also, if the local administrator detects any evidence of active hyporheic exchange on a site, the building shall be located to minimize disruption of such exchange.*

C. Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located to prevent water from entering or accumulating within the components during conditions of flooding.

5.1.3. Utilities

A. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems;

B. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters; and

C. Onsite waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding. *New on-site sewage disposal systems are prohibited in the Riparian Buffer Zone, the floodway, in areas not yet mapped where there could be channel migration and within the 10-year floodplain elevation.*

5.1.4. Subdivision Proposals

A. All subdivision proposals shall be consistent with the need to minimize flood damage;

B. All subdivision proposals shall have public utilities and facilities, such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage;

C. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage; and,

D. Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or 5 acres (whichever is less).

E. All subdivision proposals shall be consistent with the need to maximize riparian ecosystems, allow for channel migration and preserve existing beneficial natural functions, by:

i. Identifying the Riparian Buffer Zone, floodway, and channel migration zone (if known) on proposed subdivision maps. Note - Identifying channel migration zones is a requirement of the inventory that is done as part of developing a Shoreline Master Program under the new Shoreline Guidelines.

ii. Prohibiting new, buildable lots within the Riparian Buffer Zone, floodway and, if known, the channel migration zone.

iii. Requiring that new lots outside the Riparian Buffer Zone, floodway and, if known, the channel migration zone, have land with adequate building space outside the 100-year floodplain.

iv. For existing legal subdivisions in the floodplain, new construction on lots that have adequate buildable space outside the floodplain is directed to that location.

v. For any development that can occur in new subdivisions, such as access roads, utilities, parks, trails, etc., limits on impervious surfaces and native vegetation removal at Section 5.5 shall apply, and new road crossings over streams are prohibited.

vi. The local administrator should apply concepts of cluster development, density transfer, credits and bonuses, planned unit development, and transfer of development rights wherever possible and allowed by the (city's, county's) development codes.

5.1.5. Review of Building Permits

Where elevation data is not available either through the Flood Insurance Study, FIRM, or from another authoritative source (Section 4.3.2), applications for building permits shall be reviewed to assure that proposed construction will be reasonably safe from flooding. The test of reasonableness is a local judgment and includes use of historical data, high water marks, photographs of past flooding, etc., where available. Failure to elevate at least two feet above the highest adjacent grade in these zones may result in higher insurance rates.

5.2. SPECIFIC STANDARDS

In all areas of special flood hazards where base flood elevation data has been provided (Zones A1-30, AH, and AE) as set forth in Section 3.2, BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD, or Section 4.3.2, Use of Other Base Flood Data (In A and V Zones), the following provisions are required:

5.2.1. Residential Construction

A. New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated one foot or more above the base flood elevation.

B. Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, or shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

i. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.

ii. The bottom of all openings shall be no higher than one foot above grade.

iii. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

5.2.2. Nonresidential Construction

New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated one foot or more above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

A. Be flood proofed so that below one foot or more above the base flood level the structure is watertight with walls substantially impermeable to the passage of water;

B. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

C. Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the official as set forth in Section 4.3.3(B);

D. Nonresidential structures that are elevated, not flood proofed, must meet the same standards for space below the lowest floor as described in Section 5.2.1(2);

E. Applicant's flood proofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the flood proofed level (e.g. a building flood proofed to the base flood level will be rated as one foot below).

5.2.3. Manufactured Homes

A. All manufactured homes to be placed or substantially improved on sites:

   i. Outside of a manufactured home park or subdivision,

   ii. In a new manufactured home park or subdivision,

   iii. In an expansion to an existing manufactured home park or subdivision, or

   iv. In an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated one foot or more above the base flood elevation and be securely anchored to an adequately designed foundation system to resist flotation, collapse and lateral movement.

B. Manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision that are not subject to the above manufactured home provisions shall be elevated so that either:

   i. The lowest floor of the manufactured home is elevated one foot or more above the base flood elevation, or

   ii. The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately designed foundation system to resist flotation, collapse, and lateral movement.

5.2.4. Recreational Vehicles

Recreational vehicles placed on sites are required to either:

A. Be on the site for fewer than 180 consecutive days; or

B. Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or

C. Meet the requirements of 5.2-3 above and the elevation and anchoring requirements for manufactured homes.

5.3 BEFORE REGULATORY FLOODWAY

in areas with base flood elevations but where a regulatory floodway has not been designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

5.4 FLOODWAYS

Located within areas of special flood hazard established in Section 3.2 are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters, which carry debris, potential projectiles, and erosion potential, the following provisions apply:

A. Prohibit encroachments, including fill, new construction, substantial improvements, and other development unless certification by a registered professional engineer is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment shall not result in any increase in flood levels during the occurrence of the base flood discharge. *If the mapped floodway is the greater of the measures at Section 5.5.1, uses in the floodway are subject to the restrictions of the Riparian Buffer Zone, unless an exception is applied for per Section 5.5.3(i). Also, an exception to the no-rise criteria is allowed at the discretion of the local administrator for projects designed to create or restore fish habitat, including recruitment of woody debris.*

B. Construction or reconstruction of residential structures is prohibited within designated floodways, except for (i) repairs, reconstruction, or improvements to a structure which do not increase the ground floor area; and (ii) repairs, reconstruction or improvements to a structure, the cost of which does not exceed 50 percent of the market value of the structure either, (A) before the repair, or reconstruction is started, or (B) if the structure has been damaged, and is being restored, before the damage occurred. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or to structures identified as historic places shall not be included in the 50 percent.

C. If Section 5.4(A) is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Section 5.0, PROVISIONS FOR FLOOD HAZARD REDUCTION.

5.5 ADDITIONAL STANDARDS FOR RIPARIAN ECOSYSTEM PROTECTION

In all areas of special flood hazards, including unnumbered A and V zones, the following standards apply:

5.5.1 Riparian Buffer Zone (RBZ)

A Riparian Buffer Zone is established for all watercourses including off channel areas – areas outside this zone but within the Special Flood Hazard Area provide necessary protection to the RBZ. The RBZ is the greater of the following:

A. 150 feet measured perpendicularly from ordinary high water for Type 1 and 2 salmonid-bearing streams; for Type 2 nonsalmonid-bearing and Type 3 streams, lakes and marine shorelines, the distance is 100 feet; on Type 4 and 5 streams and in arid areas, it is 50 feet;

B. The Channel Migration Zone (where known) plus 50 feet;

C. The mapped Floodway (where available).

The Riparian Buffer Zone is an overlay zone that encompasses lands as defined above on either side of all streams, and for all other watercourses including off channel areas. The RBZ is a no-disturbance zone, other than for approved stream restoration activities. Any property or portion thereof that lies within the RBZ is subject to the restrictions of the RBZ, as well as any zoning restrictions that apply to the parcel in the underlying zone. Restrictions in this area apply to all development, per the definition of "development," and the following restrictions are specifically noted:

A. Buildings, including accessory buildings, are prohibited.

B. No new impervious surfaces may be created.

C. Removal of native vegetation is prohibited.

D. New clearing, grading, filling, land-disturbing activity or other "development" (see definition) is not allowed, other than for the purpose of replacing non-native vegetation with native vegetation, and for other restoration work that may be approved by the local administrator.

E. Septic tanks and drain fields, dumping of any materials, hazardous or sanitary waste landfills, and receiving areas for toxic or hazardous waste or other contaminants, are prohibited.

5.5.2 Outside the Riparian Buffer Zone

Outside the Riparian Buffer Zone but within the floodplain, the following restrictions apply:

A. Buildings shall be set back 15 feet from the RBZ and shall be constructed using post, pier, piling or stem-wall construction techniques, which permit water to flow beneath the structure, or;

B. If a building is proposed to be built on earth fill, it must be set back 15 feet from the RBZ and the applicant must obtain a certification from a qualified professional that the fill will/will not harm fish habitat, and that it will/will not block side channels, or inhibit channel migration, or increase flood hazard to others i.e., the fill will not be placed within a channel migration zone, whether or not the [city, county] has delineated such zones as of the time of the application. This certification must comply with the (city's, county's) peer review process.

C. Balanced cut and fill techniques may be used to elevate a structure, provided the structure is set back 15 feet from the RBZ and the fill is approved by the local administrator, who shall require certification from a qualified professional that the fill will will/will not harm fish habitat, and that it will/will not block side channels or inhibit channel migration, or increase flood hazard to others i.e., the fill will not be placed within a channel migration zone whether or not the [city, county] has delineated such zones as of the time of the application. This certification must comply with the (city's, county's) peer review process. OPTIONAL: Change "may" to "shall" in (c) and require balanced cut and fill together with a required certification; replace (b) with (c).

D. Creation of new impervious surfaces shall not exceed 10 percent of the surface area of the portion of the lot in the floodplain.

E. Removal of native vegetation must leave 65 percent of the surface area of the portion of the lot in the floodplain in an undeveloped state; the 65 percent pertains to the entire portion of the lot inthe floodplain, including that area in the RBZ, where removal of native vegetation is prohibited.

F. For existing lots created before the date of this ordinance, and for lots in degraded condition, the applicant can apply for an exception to the impervious surface and vegetation retention

requirements. The standard for exceptions is to minimize total building coverage and all other impervious surfaces to allow up to 3000 square feet of disturbance if the lot is less than 30,000 square feet, and no more than 10 percent if the lot is greater than 30,000 square feet. Disturbance includes land alteration involving grading, utility installation and landscaping, but does not include land used for an on-site sewage disposal system. If the applicant cannot meet the impervious surface and/or vegetation retention standards because of site degradation, he/she will be notified of possible consequences related to the Endangered Species Act, and provided such notification described at Section 4.3.1(D), the purpose of which is to encourage restoration.

G. *The proposed action must be designed and located so that it will not require new structural flood protection (e.g., levees)*

5.5.3 Exceptions to Restrictions of the Riparian Buffer Zone

The local administrator may grant an exception to the requirements of the Riparian Buffer Zone. Such an exception must be based on a report prepared by a qualified professional for the applicant, and shall require conditions of approval, including mitigation and/or restoration, necessary to assure that the action will not in any way degrade riparian ecosystem functions.

A. *Some uses are allowed outright, including activities such as: [1] repair or remodel of an existing building in its existing footprint, including buildings damaged by fire or other casualties; [2] removal of noxious weeds; [3] replacement of non-native vegetation with native vegetation; [4] ongoing activities such as lawn and garden maintenance; [5] removal of hazard trees; [6] normal maintenance of public utilities and facilities; and [7] restoration or enhancement of floodplains, riparian areas and streams that meet Federal and State standards.*

B. *Water-dependent uses, such as fish enhancement projects approved by the (city, county), private boat docks, marinas, boat ramps, etc.*

C. *Normal farm practices, other than buildings, in existence at the date of adoption of this ordinance, on land zoned for agriculture.*

D. *Crossings by transportation facilities and utility lines. Issuance of permits for such uses or activities is contingent upon the completion of a feasibility study that identifies alternative routing strategies that do not violate the RBZ, and on a mitigation plan that assures no net loss of ecological functions in the RBZ and provides restoration where the RBZ is degraded.*

E. *Trails are only allowed after a critical areas study documents no loss of buffer function, mitigation is added which may include increasing buffer widths equal to the width of the trail, construction uses pervious materials, and the trail is located on the portion of the buffer that is farther away from the stream.*

F. *New construction of single-family buildings is not permitted except as may be approved through a variance related to size, shape or topography of the property weighed against the possibility of a taking for a parcel that was legally created prior to the date of this ordinance, and may only be allowed if the action results in an equal or greater level of ecological function than the current condition, as certified by a qualified professional.*

G. *Buffer width averaging may be allowed by the local administrator if it is based on a Habitat Management Plan prepared by a qualified professional, will provide additional natural resource protection over existing conditions, and the total area contained in the buffer on the development proposal site does not decrease nor is there more than a 25 percent decrease anywhere within the buffer. The local administrator may increase buffer widths when necessary to protect streams. This action will be supported by appropriate documentation demonstrating that: [1] a larger buffer is necessary to maintain critical habitat; [2] increased protection is necessary based on evidence of a migrating stream channel; or [3] the adjacent land is susceptible to severe erosion and erosion control measures cannot effectively prevent adverse impacts to the riparian area.*

H. Floodway exception. If a proposed site is in a floodway that exceeds the other two distance measurements in the RBZ, the applicant has the option to determine whether or not the site is located within the elevation of the 10-year floodplain. If it is both within the floodway and 10-year floodplain, the RBZ and floodway restrictions apply; if it is within the floodway but outside the 10-year floodplain, floodway restrictions and restrictions outside the RBZ apply.

I. Modifications based on detailed community studies. If a community has completed, documented and adopted a detailed, comprehensive watershed-type analysis that better defines riparian areas based on site conditions, etc., that material can be used to modify the RBZ distances (150, 100 and 50 feet) in Section 5.5.1.

Note ó V-Zone (Coastal Velocity) and AO Zone (sheet flow) ordinance language not included in this model.

APPX. C | MODEL STORMWATER MANAGEMENT ORDINANCE

Prepared by the
Washington State Department of
Ecology

SECTION 1

Findings of Fact, Need, & Purpose

1.1 Findings of Fact

The [City/County Council/Board of County Commissioners] of the [City/County] hereby finds that:

1.1.1 Stormwater pollution is a problem associated with land utilization and development and the common occurrence of potential pollutants such as pesticides, fertilizers, petroleum products, pet wastes and numerous others.

Land utilization and development is also known to increase both the volume and duration of peak flows. The resulting erosion, scouring, and deposition of sediment affect the ecological balance in the stream.

Sedimentation and stormwater pollution cause diversity of species to decrease and allows more tolerant (and usually less desirable) species to remain.

Stormwater pollution can cause or contribute to closures of shellfish beds and swimming beaches and other restrictions on public use of the waters within the [City/County].

1.1.2 An expanding population and increased development of land have led to:

- Water quality degradation through discharge of nutrients, metals, oil and grease, toxic materials, and other detrimental substances including, without limitation, insect and weed control compounds;
- Drainage and storm and surface water runoff problems within the [City/County]; and
- Safety hazards to both lives and property posed by uncontrolled water runoff on streets and highways.

1.1.3 Continuation of present stormwater management practices, to the extent that they exist, will lead to water quality degradation, erosion, property damage, and endanger the health and safety of the inhabitants of the [City/County].

1.1.4 In the future such problems and dangers will be reduced or avoided if existing properties and future developers, both private and public, provide for stormwater quality and quantity controls.

1.1.5 Stormwater quality and quantity controls can be achieved when land is developed or redeveloped by implementing appropriate best management practices.

1.1.6 Best management practices can be expected to perform as intended only when properly designed, constructed and maintained.

1.2 Need

The [City/County Council/Board of County Commissioners] finds that this Chapter is necessary in order to:

1.2.1 Minimize or eliminate water quality degradation;

1.2.2 Prevent erosion and sedimentation in creeks, streams, ponds, lakes and other water bodies;

1.2.3 Protect property owners adjacent to existing and developing lands from increased runoff rates which could cause erosion of abutting property;

1.2.4 Preserve and enhance the suitability of waters for contact recreation, fishing, and other beneficial uses;

1.2.5 Preserve and enhance the aesthetic quality of the water;

1.2.6 Promote sound development policies which respect and preserve the [City/County]surface water, ground water and sediment;

1.2.7 Ensure the safety of [City/County] roads and rights-of-way;

1.2.8 Decrease stormwater-related damage to public and private property from existing and future runoff; and

1.2.9 To protect the health, safety and welfare of the inhabitants of the [City/County].

1.3 Purpose

The provisions of this Chapter are intended to guide and advise all who conduct new development or redevelopment within [City/County]. The provisions of this Chapter establish the minimum level of compliance which must be met to permit a property to be developed or redeveloped within [City/County]. It is the purpose of this Chapter to:

1.3.1 Minimize water quality degradation and sedimentation in streams, ponds, lakes, wetlands and other water bodies;

1.3.2 Minimize the impact of increased runoff, erosion and sedimentation caused by land development and maintenance practices;

1.3.3 Maintain and protect groundwater resources;

1.3.4 Minimize adverse impacts of alterations on ground and surface water quantities, locations and flow patterns;

1.3.5 Decrease potential landslide, flood and erosion damage to public and private property;

1.3.6 Promote site planning and construction practices that are consistent with natural topographical, vegetational and hydrological conditions;

1.3.7 Maintain and protect the [City/County] stormwater management infrastructure and those downstream;

1.3.8 Provide a means of regulating clearing and grading of private and public land while minimizing water quality impacts in order to protect public health and safety; and

1.3.9 Provide minimum development regulations and construction procedures which will preserve, replace or enhance, to the maximum extent practicable, existing vegetation to preserve and enhance the natural qualities of land, wetlands and water bodies.

SECTION 2

Definitions

For the purposes of this Chapter, the following definitions shall apply:

2.1 Approval

"Approval" means the proposed work or completed work conforms to this Chapter in the opinion of the Administrator.

2.2 Basin Plan

"Basin plan" means a plan and all implementing regulations and procedures including but not limited to, land use management adopted by ordinance for managing surface and storm water management facilities and features within individual sub-basins.

2.3 Best Management Practice

"Best Management Practice" or "BMP" means physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution of water. BMPs are listed and described in the Manual.

2.4 Civil Engineer

"Civil engineer" means a professional engineer licensed in the State of Washington in Civil Engineering.

2.5 Civil Engineering

"Civil engineering" means the application of the knowledge of the forces of nature, principles of mechanics and the properties of materials to the evaluation, design and construction of civil works for the beneficial uses of mankind.

2.6 Clearing

"Clearing" means the destruction and removal of vegetation by manual, mechanical, or chemical methods.

2.7 Commercial Agriculture

"Commercial agriculture" means those activities conducted on lands defined in RCW 84.34.020(2), and activities involved in the production of crops or livestock for wholesale trade. An activity ceases to be considered commercial agriculture when the area on which it is conducted is proposed for conversion to a nonagricultural use or has lain idle for more than five (5) years, unless the idle land is registered in a federal or state soils conservation program, or unless the activity is maintenance of irrigation ditches, laterals, canals, or drainage ditches related to an existing and on-going agricultural activity.

2.8 Critical Areas

"Critical Areas" means, at a minimum, areas which include wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat

conservation areas, frequently flooded areas, geologically hazardous areas, including unstable slopes, and associated areas and ecosystems.

2.9 Design Storm

"Design Storm" means a prescribed hyetograph and total precipitation amount (for a specific duration recurrence frequency) used to estimate runoff for a hypothetical storm of interest or concern for the purposes of analyzing existing drainage, designing new drainage facilities or assessing other impacts of a proposed project on the flow of surface water. (A hyetograph is a graph of percentages of total precipitation for a series of time steps representing the total time during which the precipitation occurs.)

2.10 Detention

"Detention" means the release of stormwater runoff from the site at a slower rate than it is collected by the stormwater facility system, the difference being held in temporary storage.

2.11 Detention Facility

"Detention facility" means an above or below ground facility, such as a pond or tank, that temporarily stores stormwater runoff and subsequently releases it at a slower rate than it is collected by the drainage facility system. There is little or no infiltration of stored stormwater.

2.12 Drainage Basin

"Drainage basin" means a geographic and hydrologic subunit of a watershed.

2.13 Earth Material

"Earth material" means any rock, natural soil or fill and/or any combination thereof.

2.14 Ecology

"Ecology" means the Washington State Department of Ecology.

2.15 Erosion

"Erosion" means the wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep. Detachment and movement of soil or rock fragments by water, wind, ice, or gravity.

2.16 Excavation

"Excavation" means the mechanical removal of earth material.

2.17 Existing Site Conditions

"Existing site conditions" means:

A. For developed sites with stormwater facilities that have been constructed to meet the standards in the Minimum Requirements of this Manual, existing site conditions shall mean the existing conditions on the site.

B. For developed sites that do not have stormwater facilities that meet the Minimum Requirements, existing site conditions shall mean the conditions that existed prior to local government adoption of a stormwater management program. If in question, the existing site conditions shall be documented by aerial photograph records, or other appropriate means.

C. For all sites in water quality sensitive areas as identified under Minimum Requirement #7, Water Quality Sensitive Areas, existing site conditions shall mean undisturbed forest, for the purpose of calculating runoff characteristics.

D. For all undeveloped sites outside of water quality sensitive areas, existing site conditions shall mean the existing conditions on the site.

2.18 Experimental BMP

"Experimental BMP" means a BMP that has not been tested and evaluated by the Department of Ecology in collaboration with local governments and technical experts.

2.19 Fill

"Fill" means a deposit of earth material placed by artificial means.

2.20 Forest Practice

"Forest practice" means any activity conducted on or directly pertaining to forest land and relating to growing, harvesting, or processing timber, including but not limited to: road and trail construction; harvesting, final and intermediate; precommercial thinning; reforestation; fertilization; prevention and suppression of diseases and insects; salvage of trees' and brush control.

2.21 Frequently Flooded Areas

"Frequently flooded areas" means the 100-year floodplain designations of the Federal Emergency Management Agency and the National Flood Insurance Program.

2.22 Geologically Hazardous Areas

"Geologically hazardous areas" means areas that because of their susceptibility to erosion, sliding, earthquake or other geological events, are not suited to the siting of commercial, residential or industrial development consistent with public health or safety concerns.

2.23 Grade

"Grade" means the slope of a road, channel, or natural ground. The finished surface of a canal bed, roadbed, top of embankment, or bottom of excavation; any surface prepared for the support of construction such as paving or the laying of a conduit.

2.24 Grade

To "Grade" means to finish the surface of a canal bed, roadbed, top of embankment or bottom of excavation.

2.25 Ground Water

"Ground water" means water in a saturated zone or stratum beneath the surface of land or a surface water body.

2.26 Hydroperiod

"Hydroperiod" means the seasonal occurrence of flooding and/or soil saturation; it encompasses depth, frequency, duration, and seasonal pattern of inundation.

2.27 Impervious Surface

"Impervious surface" means a hard surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development, and/or a hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces.

2.28 Illicit Discharge

"Illicit discharge" means all non-stormwater discharges to stormwater drainage systems that cause or contribute to a violation of state water quality, sediment quality or ground water quality standards, including but not limited to sanitary sewer connections, industrial process water, interior floor drains, car washing and greywater systems.

2.29 Interflow

"Interflow" means that portion of precipitation that infiltrates into the soil and moves laterally through the upper soil horizons until intercepted by a stream channel or until it returns to the surface for example, in a wetland, spring or seep.

2.20 Land Disturbing Activity

"Land disturbing activity" means any activity that results in a change in the existing soil cover (both vegetative and nonvegetative) and/or the existing soil topography. Land disturbing activities include, but are not limited to demolition, construction, clearing, grading, filling and excavation.

2.21 Large Parcel Erosion and Sediment Control Plan

"Large Parcel Erosion and Sediment Control Plan" or "Large Parcel ESC Plan" means a plan to implement BMPs to control pollution generated during land disturbing activity. Guidance for preparing a Large Parcel ESC Plan is contained in the Manual.

2.22 Mitigation

"Mitigation" means, in the following order of preference:

A Avoiding the impact altogether by not taking a certain action or part of an action;

B Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;

C Rectifying the impact by repairing, rehabilitating or restoring the affected environment;

D Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

E Compensation for the impact by replacing, enhancing, or providing substitute resources or environments.

2.23 Natural Location

"Natural location" means the location of those channels, swales, and other non-manmade conveyance systems as defined by the first documented topographic contours existing for the subject property, either from maps or photographs, or such other means as appropriate.

2.24 New Development

"New Development" means the following activities: land disturbing activities, structural development, including construction, installation or expansion of a building or other structure; creation of impervious surfaces; Class IV - general forest practices that are conversions from timber land to other uses; and subdivision and short subdivision of land as defined in RCW 58.17.020. All other forest practices and commercial agriculture are not considered new development.

2.25 Permanent Stormwater Quality Control (PSQC) Plan

"Permanent Stormwater Quality Control (PSQC) Plan" means a plan which includes permanent BMPs for the control of pollution from stormwater runoff after construction and/or land disturbing activity has been completed. For small sites, this requirement is met by implementing a Small Parcel Erosion and Sediment Control Plan. Guidance on preparing a PSQC Plan is contained in the Manual.

2.26 Person

"Person" means any individual, partnership, corporation, association, organization, cooperative, public or municipal corporation, agency of the state, or local government unit, however designated.

2.27 Pollution

"Pollution" means contamination or other alteration of the physical, chemical, or biological properties, of waters of the state, including change in temperature, taste, color, turbidity, or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state as will or is likely to create a nuisance or render such waters harmful, detrimental or injurious to the public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

2.28 Redevelopment

"Redevelopment" means, on an already developed site, the creation or addition of impervious surfaces, structural development including construction, installation or expansion of a building or other structure, and/or replacement of impervious surface that is not part of a routine maintenance activity, and land disturbing activities associated with structural or impervious redevelopment.

2.29 Regional Retention/Detention System

"Regional retention/detention system" means a stormwater quantity control structure designed to correct existing excess surface water runoff problems of a basin or sub-basin. The area downstream has been previously identified as having existing or

predicted significant and regional flooding and/or erosion problems. This term is also used when a detention facility is used to detain stormwater runoff from a number of different businesses, developments or areas within a catchment.

2.30 Retention/Detention Facility (R/D)

"Retention/detention facility (R/D)" means a type of drainage facility designed either to hold water for a considerable length of time and then release it by evaporation, plant transpiration, and/or infiltration into the ground; or to hold surface and stormwater runoff for a short period of time and then release it to the surface and stormwater management system.

2.31 Site

"Site" means the portion of a piece of property which is directly subject to development.

2.32 Slope

"Slope" means the degree of deviation of a surface from the horizontal; measured as a numerical ratio, percent, or in degrees. Expressed as a ratio, the first number is the horizontal distance (run) and the second is the vertical distance (rise), as 2:1. A 2:1 slope is a 50 percent slope. Expressed in degrees, the slope is the angle from the horizontal plane, with a 90° slope being vertical (maximum) and 45° being a 1:1 or 100 percent slope.

2.33 Small Parcel Erosion and Sediment Control Plan

"Small Parcel Erosion and Sediment Control Plan" or "Small Parcel ESC Plan" means a plan for small sites to implement temporary BMPs to control pollution generated during the construction phase only, primarily erosion and sediment. Guidance for preparing a Small Parcel ESC Plan is contained in the Manual.

2.34 Soil

"Soil" means the unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.

2.35 Source Control BMP

"Source control BMP" means a BMP that is intended to prevent pollutants from entering stormwater. A few examples of source control BMPs are erosion control practices, maintenance of stormwater facilities, constructing roofs over storage and working areas, and directing wash water and similar discharges to the sanitary sewer or a dead end sump.

2.36 Stormwater

"Stormwater" means that portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, channels or pipes into a defined surface water channel, or a constructed infiltration facility.

2.37 Stormwater Drainage System

"Stormwater drainage system" means constructed and natural features which function together as a system to collect, convey, channel, hold, inhibit, retain, detain, infiltrate, divert, treat or filter stormwater.

2.38 Stormwater Facility

"Stormwater facility" means a constructed component of a stormwater drainage system, designed or constructed to perform a particular function, or multiple functions. Stormwater facilities include, but are not limited to, pipes, swales, ditches, culverts, street gutters, detention basins, retention basins, constructed wetlands, infiltration devices, catchbasins, oil/water separators, sediment basins and modular pavement.

2.39 Stormwater Management Manual

"Stormwater Management Manual" or "Manual" means the Manual adopted by reference and prepared by Ecology that contains BMPs to prevent or reduce pollution [or a technically equivalent manual approved by Ecology].

2.40 Stormwater Site Plan

"Stormwater Site Plan" means a plan which includes an Erosion and Sediment Control (ESC) Plan and/or a Permanent Stormwater Quality Control Plan (PSQCP). For small

sites, this plan is the equivalent of a Small Parcel Erosion and Sediment Control Plan. Guidance on preparing a Stormwater Site Plan is contained in the Manual.

2.41 Treatment BMP

"Treatment BMP" means a BMP that is intended to remove pollutants from stormwater. A few examples of treatment BMPs are detention ponds, oil/water separators, biofiltration swales and constructed wetlands.

2.42 Unstable Slopes

"Unstable slopes" means those sloping areas of land which have in the past exhibited, are currently exhibiting, or will likely in the future exhibit, mass movement of earth.

2.43 Water Body

"Water body" means surface waters including rivers, streams, lakes, marine waters, estuaries, and wetlands.

2.44 Watershed

"Watershed" means a geographic region within which water drains into a particular river, stream, or body of water as identified and numbered by the State of Washington Water Resource Inventory Areas (WRIAs) as defined in Chapter 173-500 WAC.

2.45 Wetland

"Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. This includes wetlands created, restored or enhanced as part of a mitigation procedure. This does not include constructed wetlands or the following surface waters of the state intentionally constructed from sites that are not wetlands: Irrigation and drainage ditches, grass-lined swales, canals, agricultural detention facilities, farm ponds, and landscape amenities.

2.46 Vegetation

"Vegetation" means all organic plant life growing on the surface of the earth.

SECTION 3
General Provisions

3.1 Abrogation And Greater Restrictions

It is not intended that this Chapter repeal, abrogate, or impair any existing regulations, easements, covenants, or deed restrictions. However, where this Chapter imposes greater restrictions, the provisions of this Chapter shall prevail.

3.2 Interpretation

The provisions of this Chapter shall be held to be Minimum Requirements in their interpretation and application and shall be liberally construed to serve the purposes of this Chapter.

SECTION 4
Applicability

4.1 More Strict Applies

When any provision of any other chapter of the [City's/County's] regulations conflicts with this Chapter, that which provides more environmental protection shall apply unless specifically provided otherwise in this Chapter.

4.2. Written Procedures

The Director is authorized to adopt written procedures for the purpose of carrying out the provisions of this Chapter. Prior to fulfilling the requirements of this Chapter, the [City/County] shall not grant any approval or permission to conduct a regulated activity including but not limited to the following:

[list all applicable permits and approvals, which may include the following: building permit, commercial or residential; binding site plan; conditional use permit; franchise right-of-way construction permit; grading and clearing permit; master plan development; planned unit development; right-of-way permit; shoreline substantial development permit; shoreline variance; shoreline conditional use permit; shoreline environmental redesignation; unclassified use permit; variance; zone reclassification; subdivision; short subdivision; special use permit; utility and other use permit; zone reclassification]; or any subsequently adopted permit or required approval not expressly exempted by this Chapter.

4.3 Stormwater Site Plan Required

Regulated activities shall be conducted only after the [City/County] approves a Stormwater Site Plan which includes one or more of the following as required by this Chapter:

- Small Parcel Erosion and Sediment Control Plan
- Large Parcel Erosion and Sediment Control Plan
- Permanent Stormwater Quality Control (PSQC) Plan

SECTION 5

Regulated Activities & Allowed Activities

5.1 Regulated Activities

Consistent with the Minimum Requirements contained in this Chapter, the [City/County] shall approve or disapprove the following activities, unless exempted in Section 5.2 below.

5.1.1 New Development:

A. Land disturbing activities;

B. Structural development, including construction; installation or expansion of a building or other structure;

C. Creation of impervious surfaces;

D. Class IV general forest practices that are conversions from timber land to other uses;

E. Subdivision, short subdivision and binding site plans, as defined in Ch.58.17.020 RCW.

5.1.2 Redevelopment

Redevelopment on an already developed site, the creation or addition of impervious surfaces, structural development including construction, installation or expansion of a building or other structure, land disturbing activity, and/or replacement of impervious surface that is not part of a routine maintenance activity, and land disturbing activities associated with structural or impervious redevelopment.

5.2 Exemptions

The following are exempt from this Chapter:

A. Commercial agriculture, and forest practices regulated under Title 222 WAC, except for Class IV General forest practices that are conversions from timber land to other uses, are exempt from the provisions of this Chapter.

B. Development undertaken by the Washington State Department of Transportation in state highway rights-of-way is regulated by Chapter 173-270 WAC, the Puget Sound Highway Runoff Program.

C. All other new development and redevelopment is subject to the Minimum Requirements of this Chapter.

SECTION 6
General Requirements

6.1 Stormwater Management Manual Adopted

The latest edition of Ecology's Stormwater Management Manual is hereby adopted by reference and is hereinafter referred to as the Manual.

6.2 Stormwater Best Management Practices (BMPs)

BMPs shall be used to control pollution from stormwater. BMPs shall be used to comply with the standards in this Chapter. BMPs are in the Manual.

6.2.1 Experimental BMPs

In those instances where appropriate BMPs are not in the Manual, experimental BMPs should be considered. Experimental BMPs are encouraged as a means of solving problems in a manner not

addressed by the Manual in an effort to improve stormwater quality technology. Experimental BMPs must be approved in accordance with the approval process outlined in the Manual.

6.3 Illicit Discharges

Illicit discharges to stormwater drainage systems are prohibited.

SECTION 7
Approval Standards

7.1 Small Parcel Minimum Requirements

The following new development shall be required to control erosion and sediment during construction, to permanently stabilize soil exposed during construction, to comply with Small Parcel Requirements 1 through 5 below:

A. Individual, detached, single family residences and duplexes.

B. Creation or addition of less than 5,000 square feet of impervious surface area.

C. Land disturbing activities of less than 1 acre.

D. Compliance shall be demonstrated through the implementation of an approved Small Parcel Erosion and Sediment Control Plan.

7.1.1 Small Parcel Requirement #1 — Construction access route

Construction vehicle access shall be, whenever possible, limited to one route. Access points shall be stabilized with quarry spall or crushed rock to minimize the tracking of sediment onto public roads.

7.1.2 Small Parcel Requirement #2 — Stabilization of Denuded Areas

Soil stabilization. All exposed soils shall be stabilized by suitable application of BMPs, including but not limited to sod or other vegetation, plastic covering, mulching, or application of ground base on areas to be paved. All BMPs shall be selected, designed and maintained in accordance with an approved manual. From October 1 through April 30, no soils shall remain exposed for more than 2 days. From May 1 through September 30, no soils shall remain exposed for more than 7 days.

7.1.3 Small Parcel Requirement #3 — Protection of Adjacent Properties

Adjacent properties shall be protected from sediment deposition by appropriate use of vegetation buffer strips, sediment barriers or filters, dikes or mulching, or by a combination of these measure and other appropriate BMPs.

7.1.4 Small Parcel Requirement #4 — Maintenance

All erosion and sediment control BMPs shall be regularly inspected and maintained to ensure continued performance of their intended function.

7.1.5 Small Parcel Requirement #5 — Other BMPs

As required by the Director, other appropriate BMPs to mitigate the effects of increased runoff shall be applied.

7.2 Large Development Minimum Requirements

7.2.1 New development

A. All new development that includes the creation or addition of 5,000 square feet, or greater, of new impervious surface area, and/or land disturbing activity of one acre or greater, shall comply with Minimum Requirements #1 through #11 in Sections 7.2.3 through 7.2.13. Compliance shall be demonstrated through the implementation of an approved Stormwater Site Plan consisting of a Large Parcel ESC Plan and a PSQC Plan, as appropriate.

B. All new development that includes the creation or addition of 5,000 square feet, or greater, of new impervious surface area, and land disturbing activity of less than one acre, shall comply with Minimum Requirements #2 through #11 in Sections 7.2.4 through 7.2.13 and the Small Parcel Minimum Requirements found in Section 7.1 above. Compliance shall be demonstrated through the implementation of an approved Stormwater Site Plan that includes a Small Parcel Erosion and Sediment Control Plan and a PSQC Plan.

C. This Section does not apply to the construction of individual, detached, single family residences and duplexes. Those types of new development are regulated in the Small Parcel Minimum Requirements.

7.2.2 Redevelopment

Where redevelopment greater than or equal to 5,000 square feet occurs new development Minimum Requirements #1 through #11 in Sections 7.2.3 through 7.2.13, shall apply to that portion of the site that is being redeveloped, and source control BMPs shall be applied to:

A. The entire site, including adjoining parcels if they are part of the project.

B. In addition to the above requirements, where one or more of the following conditions apply, a stormwater management plan shall be prepared that includes a schedule for implementing the minimum requirements to the maximum extent practicable, for the entire site, including adjoining parcels if they are part of the project. An adopted and implemented basin plan (Minimum Requirement #9) may be used to develop redevelopment requirements that are tailored to a specific basin.

(1) Existing sites greater than 1 acre in size with 50 percent or more impervious surface.

(2) Sites that discharge to a receiving water that has a documented water quality problem. Subject to local priorities, a documented water quality problem includes, but is not limited to water bodies:

- Listed in reports required under section 305(b) of the Clean Water Act, and designated as not supporting beneficial uses;
- Listed under section 303(d) of the Clean Water Act as not expected to meet water quality standards or water quality goals;
- Listed in Washington State's Nonpoint Source Assessment required under section 319(a) of the Clean Water Act that, without additional action to control nonpoint sources of pollution cannot reasonably be expected to attain or maintain water quality standards.

(3) Sites where the need for additional stormwater control measures have been identified through a basin plan, the watershed ranking process under Ch. 400-12 WAC, or through Growth Management Act planning.

7.2.3 Minimum Requirement #1 — Erosion and Sediment Control

All new development and redevelopment that includes land disturbing activities equal to or greater than 1 acre shall comply with Erosion and Sediment Control Requirements 1 through 14, below. Compliance with the Erosion and Sediment Control Requirements shall be demonstrated through implementation of an approved Large Parcel Erosion and Sediment Control Plan. All new development and redevelopment that includes land disturbing activities of less than 1 acre shall comply with the Small Parcel Minimum Requirements found in Section 7.1, above. Compliance with the small parcel requirements shall be demonstrated through implementation of a Small Parcel Erosion and Sediment Control Plan. The following erosion and sediment control requirements shall be met:

1. Stabilization and Sediment Trapping

All exposed and unworked soils shall be stabilized by suitable application of BMPs. From October 1 to April 30, no soils shall remain unstabilized for more than 2 days. From May 1 to September 30, no soils shall remain unstabilized for more than 7 days. Prior to leaving the site, stormwater runoff shall pass through a sediment pond or sediment trap, or other appropriate BMPs.

2. Delineate Clearing and Easement Limits

In the field, mark clearing limits and/or any easements, setbacks, sensitive/critical areas and their buffers, trees and drainage courses.

3. Protection of Adjacent Properties

Properties adjacent to the project site shall be protected from sediment deposition.

4. Timing and Stabilization of Sediment Trapping Measures

Sediment ponds and traps, perimeter dikes, sediment barriers, and other BMPs intended to trap sediment on-site shall be constructed as a first step in grading. These BMPs shall be functional before land disturbing activities take place. Earthen structures such as dams, dikes, and diversions shall be seeded and mulched according to the timing indicated in Erosion and Sediment Control Requirement #1.

5. **Cut and Fill Slopes**

Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. In addition, slopes shall be stabilized in accordance with Erosion and Sediment Control Requirement #1.

6. Controlling Off-Site Erosion

Properties and waterways downstream from development sites shall be protected from erosion due to increases in the volume, velocity, and peak flow rate of stormwater runoff from the project site.

7. Stabilization of Temporary Conveyance channels and outlets

All temporary on-site conveyance channels shall be designed, constructed and stabilized to prevent erosion from the expected velocity of flow from a 2-year, 24-hour frequency storm for the developed condition. Stabilization adequate to prevent erosion of outlets, adjacent streambanks, slopes and downstream reaches shall be provided at the outlets of all conveyance systems.

8. Storm Drain Inlet Protection

All storm drain inlets made operable during construction shall be protected so that stormwater runoff shall not enter the conveyance system without first being filtered or otherwise treated to remove sediment.

9. Underground Utility Construction

The construction of underground utility lines shall be subject to the following criteria:

(1) Where feasible, no more than 500 feet of trench shall be opened at one time.

(2) Where consistent with safety and space considerations, excavated material shall be placed on the uphill side of trenches.

(3) Trench dewatering devices shall discharge into a sediment trap or sediment pond.

10. Construction Access Routes

Wherever construction vehicle access routes intersect paved roads, provisions must be made to minimize the transport of sediment (mud) onto the paved road. If sediment is transported onto a road surface, the roads shall be cleaned thoroughly at the end of each day. Sediment shall be removed from roads by shoveling or sweeping and be transported to a controlled sediment disposal area. Street washing shall be allowed only after sediment is removed this manner.

11. Removal of Temporary BMPs

All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed or stabilized on site. Disturbed soil areas resulting from removal shall be permanently stabilized.

12. Dewatering Construction Sites

Dewatering devices shall discharge into a sediment trap or sediment pond.

13. **Control of Pollutants Other Than Sediment on Construction Sites**

    All pollutants other than sediment that occur on-site during construction shall be handled and disposed of in a manner that does not cause contamination of stormwater.

14. **Maintenance**

    All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. All maintenance and repair shall be conducted in accordance with an approved manual.

15. **Financial Liability**

    Performance bonding, or other appropriate financial instruments, shall be required for all projects to ensure compliance with the approved erosion and sediment control plan.

7.2.4 Minimum Requirement #2 — Preservation fo Natural Drainage Systems

Natural drainage patterns shall be maintained, and discharges from the site shall occur at the natural location, to the maximum extent practicable.

7.2.5 Minimum Requirement #3 — Source Control of Pollution

Source control BMPs shall be applied to all projects to the maximum extent practicable. Source control BMPs shall be selected, designed, and maintained according to an approved manual. An adopted and implemented basin plan (Minimum Requirement #9) may be used to develop source control requirements that are tailored to a specific basin, however, in all circumstances, source control BMPs shall be required for all sites.

7.2.6 Minimum Requirement #4 — Runoff Treatment BMPs

All projects shall provide treatment of stormwater. Treatment BMPs shall be sized to capture and treat the water quality design storm, defined as the 6-month, 24-hour return period storm. The first priority for treatment shall be to infiltrate as much as possible of the water quality design storm, only if site conditions are appropriate and ground water quality will not be impaired. Direct discharge of untreated stormwater to ground water is prohibited. All treatment BMPs shall be selected, designed, and maintained according to an approved manual. Stormwater treatment BMPs shall not be built within a natural vegetated buffer, except for necessary conveyance systems as approved by the Director. An adopted and implemented basin plan (Minimum Requirement #9) may be used to develop runoff treatment requirements that are tailored to a specific basin.

7.2.7 Minimum Requirement #5 — Streambank Erosion Control

The requirement below applies only to situations where stormwater runoff is discharged directly or indirectly to a stream, and must be met in addition to meeting the requirements in Minimum Requirement #4, Runoff Treatment BMPs:

A. Stormwater discharges to streams shall control streambank erosion by limiting the peak rate of runoff from individual development sites to 50 percent of the existing condition 2-year, 24-hour

design storm while maintaining the existing condition peak runoff rate for the 10-year, 24-hour and 100-year, 24-hour design storms. As the first priority, streambank erosion control BMPs shall utilize infiltration to the fullest extent practicable, only if site conditions are appropriate and ground water quality is protected.

B. Streambank erosion control BMPs shall be selected, designed, and maintained according to the manual. Stormwater treatment BMPs shall not be built within a natural vegetated buffer, except for necessary conveyance systems as approved by the Director.

C. An adopted and implemented basin plan (Minimum Requirement #9) may be used to develop streambank erosion control requirements that are tailored to a specific basin.

7.2.8 Minimum Requirement #6 — Wetlands

The requirements below apply only to situations where stormwater discharges directly or indirectly through a conveyance system into a wetland, and must be met in addition to meeting the requirements in Minimum Standard #4, Runoff Treatment BMPs.

A. Stormwater discharges to wetlands must be controlled and treated to the extent necessary to meet the State Water Quality Standards, Ch. 173-201A WAC, or Ground Water Quality Standards, Ch. 173-200 WAC, as appropriate.

B. Discharges to wetlands shall maintain the hydroperiod and flows of existing site conditions to the extent necessary to protect the characteristic uses of the wetland. Prior to discharging to a wetland, alternative discharge locations shall be evaluated, and natural water storage and infiltration opportunities outside the wetland shall be maximized.

C. Created wetlands that are intended to mitigate for loss of wetland acreage, function and value shall not be designed to also treat stormwater.

D. In order for constructed wetlands to be considered treatment systems, they must be constructed on sites that are not wetlands and they must be managed for stormwater treatment. If these systems are not managed and maintained in accordance with the manual for a period exceeding three years these systems may no longer be considered constructed wetlands. Discharges from constructed wetlands to waters of the state (including discharges to natural wetlands) are regulated under Ch. 90.48 RCW, Ch. 173-201 WAC, and Ch. 173-200 WAC.

E. Stormwater treatment BMPs shall not be built within a natural vegetated buffer, except for necessary conveyance systems as approved by the Director.

F. An adopted and implemented basin plan (Minimum Requirement #9) may be used to develop requirements for wetlands that are tailored to a specific basin.

7.2.9 Minimum Requirement #7 — Water Quality Sensitive Areas

Where the Director determines that the Minimum Requirements do not provide adequate protection of water quality sensitive areas, either on-site or within the basin, more stringent controls shall be required to protect water quality. Stormwater treatment BMPs shall not be built within a natural vegetated buffer, except for necessary conveyance systems as approved by the local government. An adopted and implemented basin plan (Minimum Requirement #9) may be used to develop requirements for water quality sensitive areas that are tailored to a specific basin.

7.2.10 Minimum Requirement #8 — Off-Site Analysis and Mitigation

All development projects shall conduct an analysis of off-site water quality impacts resulting from the project and shall mitigate these impacts. The analysis shall extend a minimum of one-fourth of a mile downstream from the project. The existing or potential impacts to be evaluated and mitigated shall include, at a minimum, but not be limited to: excessive sedimentation; streambank erosion; discharges to ground water contributing or recharge zones; and violations of water quality standards; spills and discharges of priority pollutants.

7.2.11 Minimum Requirement #9 — Basin Planning

Adopted and implemented watershed-based basin plans may be used to modify any or all of the Minimum Requirements, provided that the level of protection for surface or ground water achieved by the basin plan will equal or exceed that which would be achieved by the Minimum Requirements in the absence of a basin plan. Basin plans shall evaluate and include, as necessary, retrofitting of BMPs for existing development and/or redevelopment in order to achieve watershed-wide pollutant reduction goals. Standards developed from basin plans shall not modify any of the above requirements until the basin plan is formally adopted and fully implemented by local government. Basin plans shall be developed according to an approved manual.

7.2.12 Minimum Requirement #10 — Operation and Maintenance

An operation and maintenance schedule shall be provided for all proposed stormwater facilities and BMPs, and the party (or parties) responsible for maintenance and operation shall be identified.

7.2.13 Minimum Requirement #11 — Financial Liability

Performance bonding or other appropriate financial instruments shall be required for all projects to ensure compliance with these standards.

7.2.14 Exceptions

Exceptions to Minimum Requirements #1 through #11 may be granted prior to permit approval and construction. An exception may be granted after a public hearing, provided that a written finding of fact is prepared, that addresses the following:

A. The exception provides equivalent environmental protection and is in the overriding public interest; and that the objectives of safety, function, environmental protection and facility maintenance, based upon sound engineering, are fully met;

B. That there are special physical circumstances or conditions affecting the property such that the strict application of these provisions would deprive the applicant of all reasonable use of the parcel of land in question, and every effort to find creative ways to meet the intent of the Minimum Requirements has been made;

C. That the granting of the exception will not be detrimental to the public health and welfare, nor injurious to other properties in the vicinity and/or downstream, and to the quality of waters of the state; and

D. The exception is the least possible exception that could be granted to comply with the intent of the Minimum Requirements.

SECTION 8

Administration

8.1 Director

The Director of the Department of [appropriate department]or a designee shall administer this Chapter and shall be referred to as the Director. The Director shall have the authority to develop and implement administrative procedures to administer and enforce this Chapter.

8.2 Review and Approval

The Director may approve, conditionally approve or deny an application for activities regulated by this Chapter.

8.3 Enforcement Authority

The Director shall enforce this Chapter.

8.4 Inspection

All activities regulated by this Chapter, except those exempt in Section 5.2, shall be inspected by the Director. The Director shall inspect projects at various stages of the work requiring approval to determine that adequate control is being exercised. Stages of work requiring inspection include, but are not limited to, preconstruction; installation of BMPs; land disturbing activities; installation of utilities, landscaping, retaining walls and completion of project. When required by the Director, a special inspection and/or testing shall be performed.

SECTION 9
Enforcement

9.1 General

Enforcement action shall be in accordance with this Chapter whenever a person has violated any provision of this Chapter. The choice of enforcement action and the severity of any penalty shall be based on the nature of the violation, the damage or risk to the public or to public resources, and/or the degree of bad faith of the person subject to the enforcement action.

9.2 Stop Work Order

The Director shall have the authority to serve a person a stop work order if an action is being undertaken in violation of this Chapter. [OPTIONAL If a portion of a project is in violation of this Chapter, the Director may issue a stop work order for the entire project.

A. Content of Order

The order shall contain:

1) A description of the specific nature, extent, and time of violation and the damage or potential damage; and

2) A notice that the violation or the potential violation cease and desist, and, in appropriate cases, the specific corrective action to be taken within a given time. A civil penalty under Section 9.3 below may be issued with the order.

B. Notice

A stop work order shall be imposed by a notice in writing, either by certified mail with return receipt requested, or by personal service, to the person incurring the same.

C. Effective Date

The stop work order issued under this Section shall become effective immediately upon receipt by the person to whom the order is directed.

D. Compliance

Failure to comply with the terms of a stop work order shall result in enforcement actions including, but not limited to, the issuance of a civil penalty.

9.3 Civil Penalty

A person who fails to comply with the requirements of this Chapter, who fails to conform to the terms of an approval or order issued, who undertakes new development without first obtaining [City/County] approval, or who fails to comply with a stop work order issued under these regulations shall be subject to a civil penalty.

A. Amount of Penalty

The penalty shall not be less than $_____ or exceed $_____[1] for each violation. Each day of continued violation or repeated violation shall constitute a separate violation.

B. Aiding or Abetting

Any person who, through an act of commission or omission, aids or abets in the violation shall be considered to have committed a violation for the purposes of the civil penalty.

C. Notice of Penalty

A civil penalty shall be imposed by a notice in writing, either by certified mail with return receipt requested or by personal service, to the person incurring the same from the City/County. The notice shall describe the violation, approximate the date(s) of violation, and shall order the acts constituting the violation to cease and desist, and, in appropriate cases, require necessary corrective action within a specific time.

D. Application for Remission or Mitigation

Any person incurring a penalty may apply in writing within __ days[2] of receipt of the penalty to the City/County for remission or mitigation of such penalty. Upon receipt of the application, the [appropriate body] may remit or mitigate the penalty only upon a demonstration of extraordinary circumstances, such as the presence of information or factors not considered in setting the original penalty. The decision may be appealed to the [appropriate body] within __ days of the decision.

E. Appeal of Civil Penalty

Persons incurring a penalty imposed by the Director may appeal in writing within __ days of the receipt of the penalty to the [appropriate body]. The [appropriate body's] decision may be appealed to the [appropriate body] within __ days of the decision.

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[1] The amount that is allowed by the City's/County's enabling legislation or charter.

[2] Time periods in this section should be consistent with similar time periods in the local government so that they are easy to remember.

9.3.1 Penalties Due

Penalties imposed under this Section shall become due and payable __ days after receiving it unless application for remission or mitigation is made or an appeal is filed. Whenever an application for remission or mitigation is made, penalties shall become due and payable 30 days after receipt of the decision regarding the remission or mitigation. Whenever an appeal of a penalty is filed, the penalty shall become due and payable after all review proceedings and a final decision has been issued confirming all or part of the penalty. If the amount of a penalty owed the City/County is not paid within the time specified, the City/County may take actions necessary to recover such penalty.

9.3.2 Penalty Recovered

[OPTIONAL Penalties recovered shall be paid to a fund dedicated to enforcement and/or enhancement of the stormwater management program.]

SECTION 10

Exceptions

10.1 Board of Appeals

After a public hearing, the [appropriate body] may grant an exception from the requirements of this Chapter. In granting any exception, the [appropriate body] may be prescribe conditions that are deemed necessary or desirable for the public interest.

10.2 Findings of Fact

Exceptions to Minimum Requirements #1 through #11 may be granted prior to permit approval and construction. An exception may be granted following a public hearing, provided that a written finding of fact is prepared, that addresses the following:

A. The exception provides equivalent environmental protection and is in the overriding public interest; and that the objectives of safety, function, environmental protection and facility maintenance, based upon sound engineering, are fully met;

B. That there are special physical circumstances or conditions affecting the property such that the strict application of these provisions would deprive the applicant of all reasonable use of the parcel of land in question, and every effort to find creative ways to meet the intent of the minimum standards has been made;

C. That the granting of the exception will not be detrimental to the public health and welfare, nor injurious to other properties in the vicinity and/or downstream, and to the quality of waters of the state; and

D. The exception is the least possible exception that could be granted to comply with the intent of the Minimum Requirements.

10.3 Prior Approval

Any exception shall be approved prior to permit approval and construction.

10.4 Duration of Exception

Exceptions granted shall be valid for 2 years, unless granted for a shorter period.

10.5 Right of Appeal

All actions of the [appropriate body] shall be final and conclusive, unless within __ days of the date of the [appropriate body's] action, the original applicant or an adverse party gives written notice of appeal to the [appropriate body] for review of the action.

SECTION 11

Severability

If any provision of this Chapter or its application to any person, entity, or circumstance is held invalid, the remainder of this Chapter or the application of the provision to other persons, entities, or circumstances shall not be affected.

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[3] The appeals procedure should be consistent with similar appeals procedures.