DEVELOPMENT CODE ARTICLE 8

~~HAZARDS AND RESOURCES~~

RESOURCE AREAS, HAZARD AREAS AND FLOODPLAIN MANAGEMENT

§ 17.8.300 PURPOSE.

The purpose of this subarticle is to establish standards and requirements where development is subject to resources or hazards as defined by these provisions. This subarticle also implements provisions contained in the Model Floodplain Management Ordinance prepared by the Federal Emergency Management Agency.

§ 17.8.305 RESOURCE AREAS.

A. Wetlands~~.~~, Wetland Buffer Areas, Wildlife Conservation Areas and Vegetated Corridors subject to the provisions of § 17.5.005 shall be left undisturbed unless:

1. Division of State Lands has issued a permit to allow fill in a wetland; or

2. Enhancements that are required or allowed either by the report approved by the city for Wildlife Conservation Areas pursuant to §~~-~~17.5.025 or by the Service Provider Letter issued by Clean Water Service.

B. Wetland buffer areas and vegetated corridors shall be provided consistent with the requirements of Clean Water Service (CWS) Design and Construction Standards. Pursuant to §~~-~~17.5.025A., a service provider letter from CWS shall be issued prior to filing for a land use permit with the city~~.~~.

C. All development with Natural Resource Areas shall attempt to design development through avoidance of the resource area. If that cannot be achieved through standard development requirements, then the requirements of §§~~-~~17.5.005 et seq. shall apply and shall override any conflicting development requirements established by other portions of the Development Code in order to minimize intrusion into the NRA.

D. All wetlands~~.~~, wetland buffers, vegetated corridors and wildlife habitats shall be established as follows.

1. For divisions of land, the area shall be placed in an open space tract separate from areas intended for development~~.~~. The open space tract is subject to the requirements of §§ 17.8.200 et seq.

2. For development not involved in a division of land, the area shall be held in common for residential condominiums or by the primary land owner for apartment~~-~~ complexes or non-residential development~~.~~. The area shall be placed within an easement and adequate maintenance provisions shall be provided consistent with the requirements of § 17.8.200.

E. Historic structures and trees~~.~~. Any modification of historic structures or the removal of trees shall comply with the requirements of §§ 17.5.200 et seq. and 17.5.100 et seq. respectively.

§ 17.8.310 HAZARD AREAS.

A. Information and studies for hazards shall be provided as follows.

1. For development sites partially or totally within ~~Flood Management Areas or~~ areas of special flood hazard ~~as determined by § 17.8.315B.~~ as defined in §17.8.320(C), there shall be provided a study prepared by an engineer certified by the State of Oregon to provide hydraulic, flood plain elevation and any other necessary analysis to meet the requirements of ~~§ 17.8.325D~~ §17.8.330(B)(2). as determined by the City Engineer~~.~~.

2. For development sites having slopes of 10% or more, the following requirements shall be met. To ensure compliance with the provisions of this Code, prior to the issuance of a building permit for the construction of any new building (as defined by § 17.12.210B.8. within the city , and prior to any grading, excavation or filling or other site modification within areas having a slope of 10% or greater, there shall be submitted to the Community Development Department for review and approval, or approval with modifications:

a. A site plan (showing any grading, excavating or filling) drawn to scale of the entire property developed and of the proposed construction; and

b. The submission of a geological assessment and geotechnical report prepared and stamped by a Certified Engineering Geologist who is a registered geologist certified in the specialty of Engineering Geology under provisions of O.R.S. 672.505 to 672.705 and a Geotechnical Engineer under provisions of O.R.S. 672.002 to 672.325. The assessment and report shall address the entire site and meet the following requirements:

i. The geological and engineering assessment shall include information and data regarding the nature, distribution of underlying geology, and the physical and chemical properties of existing soils; an opinion as to stability of the site~~.~~, and conclusions regarding the effect of geo-logic conditions on the proposed development~~.~~.

ii. The geotechnical report shall include a comprehensive description of the site topography and geology; an opinion as to the adequacy of the proposed development from an engineering standpoint; and opinion as to the extent that instability on adjacent properties may adversely affect the project; a description of the field investigation and findings ; conclusions regarding the effect of geologic conditions on the proposed development ; and specific requirements for plan modification, corrective grading and special techniques and systems to facilitate a safe and stable development . The report shall provide other recommendations as necessary, commensurate with the project grading and development~~.~~.

iii. Address the requirements of § 17.8.310B.

B. Through hazard study(ies) required pursuant to § 17.8.310A., the applicant shall establish methods to minimize hazards to acceptable risks by**:**

1. Site design approaches that avoids development within hazard area;

2. Grading, erosion control and other site preparation techniques to minimize hazard impacts;

3. Techniques to minimize impacts from utility installation; and/or

4. Building and foundation techniques to minimize hazard impacts.

C. Where a hazard area is proposed to be avoided:

1. For divisions of land, the area shall be placed in an open space tract separate from areas intended for development~~.~~. The open space tract is subject to the requirements of §§ 17.8.200 et seq.

2. For development not involved in a division of land, the area shall be held in common for residential condominiums or by the primary land owner for apartment complexes or non-residential development. The area shall be placed within an easement and adequate maintenance provisions shall be provided consistent with the requirements of § 17.8.200.

3. The tract or easement area shall be restricted to open space~~.~~. Utilities may be located within the area provided that the report proposes acceptable measures to minimize hazard impacts. Open space tracts are subject to the provisions of § 17.8.200.

§ 17.8.315 ~~FLOODPLAINS AND FLOOD MANAGEMENT AREAS~~. FLOODPLAIN MANAGEMENT CODE

A. Statutory Authorization. The State of Oregon has in ORS 197.175 designated responsibility to local governmental units to adopt floodplain management regulations design to promote the public health, safety, and general welfare of its residents.

B. Purpose. It is the purpose of the floodplain management code to promote public health, safety and general welfare, and to minimize public and private losses due to flooding in special flood hazard areas by provisions designed to:

1. Protect human life and health;

2. Minimize expenditure of public money for costly flood control projects;

3. Preserve natural and beneficial floodplain functions;

4. Minimize the need for rescue and relief efforts associated with flooding and generally undertake at the expense of the general public;

5. Minimize prolonged business interruptions.

6. Minimize damage to public facilities and utilities such as water and gas mains; electrical, telephone and sewer lines; and streets and bridges located in special flood hazard areas;

7. Help maintain a stable tax base by providing for the sound use and development of flood hazard areas so as to minimize blight areas caused by flooding;

8. Notify potential buyers that the property is in a special flood hazard area;

9. Notify those who occupy special flood hazard areas that they assume responsibility for their actions;

10. Participate in and maintain eligibility for flood insurance and disaster relief.

C. Methods of Reducing Flood Losses. In order to accomplish its purposes, this code includes methods and provision for:

1. Restricting or prohibiting development which is dangerous to health, safety, and property due to water and erosion hazards, or which result in damaging increases in erosion or in flood heights and velocities.

2. Requiring that development vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.

3. Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters.

4. Controlling filling, grading, dredging, and other development which may increase flood damage;

5. Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or may increase flood hazards in other areas;

6. Employment an standard of "no net loss" of natural and beneficial floodplain functions.

§17.8.320 FLOODPLAIN MANAGEMENT DEFINITIONS

A. APPEAL: For floodplain management purposes, an appeal is a request for a review of the interpretation of any provision of the Floodplain Management ~~Ordinance~~ Code or a request for a variance.

B. AREA OF SHALLOW FLOODING: A designated zone AO, AH, AR/AO or AR/AH on a community's Flood Insurance Rate Map (FIRM) with a one percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

~~A.~~C. AREA OF SPECIAL FOOD HAZARD: The land in the floodplain within a community subject to a 1percent or greater chance of flooding in any given year. It is shown on the Flood Insurance Rate Map (FIRM) as Zone A, AO, AH, A1-30, AE, A99, AR (V, V1-30, VE). "Special flood hazard area"

is synonymous in meaning and definition with the phrase "area of special flood hazard."

D. BASE FLOOD: The flood having a one percent chance of being excluded or exceeded in any given year.

E. BASE FLOOD ELEVATION (BFE): The elevation to which floodwater is anticipated to rise during the base flood.

F. BASEMENT: For floodplain management purposes, any area of the building having its floor subgrade (below ground level) on all sides.

G. BREAKAWAY WALL: A wall that is nor part of a 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.

H. DEVELOPMENT: Any human-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 or storage of equipment or materials.

I. FILL: Placement of any materials such as soil, gravel, crushed stone, or other materials that change the elevation of the floodplain. The placement of fill is considered "development."

J. FISH ACCESSIBLE SPACE: The volumetric space available to fish to access.

K. FISH EGRESS-ABLE SPACE: The volumetric space available to fish to exit or leave from.

L. FLOOD OR FLOODING:

a. A general and temporary condition or partial or complete inundation of normally dry land areas from:

1. The overflow of inland or tidal waters.

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

3. Mudslides (i.e., mudflows) which are proximately caused by flooding as defined in paragraph (a)(2) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

b. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclic levels

or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph (a)(1) of this definition.

M. FLOOD ELEVATION STUDY: An examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation, and determination of mudslide (i.e. mudflow) and/or flood-related erosion hazards.

N. FLOOD INSURANCE RATE MAP: The official map of a community, on which the Federal Insurance Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

O. FLOOD INSURANCE STUDY (FIS): See "Flood elevation study."

P. FLOODWAY: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Also referred to as "Regulatory Floodway."

Q. FUNCTIONALLY DEPENDENT USE: A use which cannot perform its intended purpose unless it is located or carried out in proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading cargo or passengers, and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

R. GREEN INFRASTRUCTURE: Use of natural or human-made hydrologic features to manage water and provide environmental and community benefits. Green infrastructure uses management approaches and technologies that use, enhance, and/or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration, and reuse. At a large scale, it is an interconnected network of greenspace that conserves natural systems and provides assorted benefits to human populations. At a local scale, it manages stormwater by infiltrating it into the ground where it is generated using vegetation or porous surfaces, or by capturing it for later reuse. Green infrastructure practices can be used to achieve no net loss of pervious surface by creating infiltration of stormwater in an amount equal to or greater than the infiltration lost by the placement of new impervious surface.

S. HABITAT RESTORATION ACTIVITIES: Activities with the sole purpose of restoring habitats that have only temporary impacts and long-term

benefits to habitat. Such projects cannot include ancillary structures such as a storage shed for maintenance equipment, must demonstrate that no rise in the BFE would occur as a result of the project and obtain a CLOMR and LOMR, and have obtained any other required permit (e.g., CWA Section 404 Permit).

T. HAZARD TREES: For floodplain management purposes, standing dead, dying or diseased trees or ones with a structural defect that makes it likely to fail in whole or in part and that present a potential hazard to a structure or as defined by the City.

U. HIGHEST ADJACENT GRADE: The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

V. HISTORIC STRUCTURE: For floodplain management purposes, any structure that is:

   a. Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting requirements for individual listing on the National Register:

   b. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district.

   c. Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or

   d. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

      1. By an approved state program as determined by the Secretary of the Interior or

      2. Directly by the Secretary of the Interior in states without approved programs.

W. HYDRAULICALLY EQUIVALENT ELEVATION: A location (e.g., a site where no net loss standards are implemented) that is approximately equivalent to another (e.g., the impacted site) relative to the same 100-year water surface elevation contour or base flood elevation. This may be estimated based on a point that is along the same approximate line perpendicular to the direction of flow.

X. HYDROLOGICALLY CONNECTED: The interconnection of groundwater and surface water such that they constitute one water supply and use of either results in an impact to both.

Y. IMPERVIOUS SURFACE: A surface that cannot be penetrated by water and thereby prevents infiltration and increases the amount and rate of surface water runoff, leading to erosion of stream banks, degradation of habitat, and increased sediment loads in streams. Such surfaces can accumulate large amounts of pollutants that are then "flushed" into local water bodies during storms and can also interfere with recharge of groundwater and the base flows of water bodies.

Z. LETTER OF MAP CHANGE (LOMC): An official FEMA determination, by letter, to amend or revise effective Flood Insurance Rate Maps (FIRM) and/or Flood Insurance Studies (FIS). LOMCs are issued in the following categories:

a. Letter of Map Amendment: An amendment to the Flood Insurance Rate Maps based on technical data showing that an existing structure or parcel of land that has not been elevated by fill (natural grade) was inadvertently included in the special flood hazard area because of an area of naturally high ground above the base flood.

b. Letter of Map Revision (LOMR):

1. LOMR-F (Letter of Map Revision Based on Fill). A letter from FEMA stating that an existing structure or parcel of land that has been elevated by fill would not be inundated by the base flood.

2. A LOMR revises the current FIRM and/or FIS to show changes to the floodplains, foodways or flood elevations. LOMRs are generally based on manmade alterations that affected the hydrologic or hydraulic characteristics of a flood source and thus result in modification to the existing regulatory floodway, the effective Base Food Elevation, of the Special Flood Hazard Area. It is recommended a Conditional Letter of Map Revision be approved (CLOMR) be approved by FEMA prior to issuing a permit to start a project if the project has a potential to affect the special flood hazard area.

AA. LOW IMPACT DEVELOPMENT: An approach to land development (or redevelopment) that works with nature to manage stormwater as close to its source as possible. It employs principles such as preserving and recreating natural landscape features and minimizing effective imperviousness to create functional and appealing site drainage that

treats stormwater as a resource rather than a waste product. Low Impact Development refers to designing and implementing practices that can be employed at the site level to control stormwater and help replicate the predevelopment hydrology of the site. Low Impact Development helps achieve no net loss of pervious surface by infiltrating stormwater in an amount equal to or greater than the infiltration lost by placement of new impervious surface. Low Impact Development is a subset of Green Infrastructure.

BB. LOWEST FLOOR: 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 Code.

CC. MANUFACTTURED DWELLING: 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 dwelling" does not include a "recreational vehicle" and is synonymous with "manufactured home."

DD. MANUFACTURED DWELLING PARK OR SUBDIVISION: A parcel (or contiguous parcels) of land divided into two or manufactured dwelling lots for rent or sale.

EE. MEAN HIGHER-HIGH WATER: The average of he higher-high water height of each tidal day observed over the National Tidal Epoch.

FF. MEAN SEA LEVEL: For purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which Base Flood Elevations shown on a community's Flood Insurance Rate Map are referenced.

GG. NEW CONSTRUCTION: For floodplain management purposes, "new construction" means structures for which the "Start of construction" commenced on or after the effective date of a floodplain management regulation adopted b the City of Forest Grove and includes any subsequent improvement to such structures.

HH. NO NET LOSS: A standard where adverse impacts must be avoided or offset through adherence to certain requirements so that there is no net change in the function from the existing condition when a development application is submitted to the state, tribal, or local jurisdiction. The floodplain functions of floodplain storage, water quality and vegetation must be maintained.

II. OFFSITE: For floodplain management purposes, mitigation occurring outside the project area.

JJ. ONSITE: For floodplain management purposes, mitigation occurring within the project area.

KK. ORDINARY HIGH WATER MARK: The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

LL. QUALIFIED PROFESSIONAL: For floodplain management purposes, an appropriate subject matter expert that is defined by the City.

MM. REACH: A section of a stream or river along which similar hydrologic conditions exist, such as discharge, depth, area, and slope. It can also be the length of a stream or river (with varying conditions) between major tributaries or two stream gages, or a length of river for which the characteristics are well described by readings at a single stream gage.

NN. RECREATIONAL VEHICLE: 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 towable 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.

OO. RIPARIAN: Of, adjacent to, or living on, the bank of a river, lake, pond, or other water body.

PP. RIPARIAN BUFFER ZONE (RBZ): The outer boundary of the riparian buffer zone is measured from the ordinary high-water line of a fresh waterbody (lake; pond; ephemeral, intermittent, or perennial stream) or mean higher-high water line of a marine shoreline or tidally influenced river reach to 170 feet horizontally on each side of the stream or 170 feet inland from the Mean Higher-High Water (MHHW). The riparian buffer zone includes the area between these outer boundaries on each side of the stream, including the stream channel. Where the RBZ is larger than the special flood hazard area, the no net loss standards shall only apply to the area within the special flood hazard area.

QQ. RIPARIAN BUFFER ZONE FRINGE: The area outside of the RBZ and Floodway but still within the Special Flood Hazard Area (SFHA).

RR. SILVICULTURE: The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands.

SS. SPECIAL FLOOD HAZARD AREA (SFHA): See "AREA OF SPECIAL FLOOD HAZARD" for this definition.

TT. START OF CONSTRUCTION: For floodplain management purposes, includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 180 days from the date of the permit The actual start means either 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 dwelling 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 sidewalks; 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 no occupied as dwelling units or nor 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 the alteration affects the external dimensions of a building.

UU. STRUCTURE: For floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground as well as a manufactured dwelling.

VV. SUBSTANTIAL DAMAGE: 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.

WW. SUBSTANTIAL IMPROVEMENT: For floodplain management purposes, Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the Start of Construction of the improvement. The term includes structures which have incurred SUBSTANTIAL DAMAGE, regardless of the actual work per. The term does not, however, include either:

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; or

b. Any alteration of a Historic Structure, provided that the alteration will not preclude the structure's continued designation as a Historic Structure.

XX. UNDEVELOPED SPACE: The volume of flood capacity and fish accessible/egress-able habitat from the existing ground to the Base Flood Elevation that is undeveloped. Any form of development including, but not limited to, the addition of fill, structures, concrete structures (vaults or tanks), pilings, levees and dikes, or any other development that reduces flood storage volume and fish accessible/egress-able habitat must achieve no net loss.

YY. VARIANCE: For floodplain management purposes, a grant of relief by the City from the terms of a floodplain management regulation.

ZZ. VIOLATION: For floodplain management purposes, the failure of structure or other development to be fully compliant with the City's floodplain management regulations. A structure or other development with the elevation certificate, other certifications, or other evidence of compliance required in this ~~ordinance~~ Code is presumed to be in violation until such time as the documentation is provided.

§17.8.325 FLOODPLAIN MANAGEMENT PROVISIONS

A. Lands to which this Code applies. This code applies to all areas of special flood hazard within the jurisdiction of the City of Forest Grove.

B. Basis for establishing ~~areas of~~ the special flood hazard areas. The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Washington County and Incorporated Areas" dated November 4, 2016, and as subsequently revised, with accompanying Flood Insurance Rate Maps (FIRM) are hereby adopted by reference and declared to be a part of this Code. The Flood Insurance Study and FIRM panels ~~is~~ are on file at the Forest Grove Engineering Department located at Forest Grove City Hall. ~~The best available information for flood hazard area identification as outlined in § 17.8.325C. shall be the basis for regulation until a new FIRM is issued which incorporates the data utilized under § 17.8.325C.~~

~~C. Warning and disclaimer of liability.~~

~~The degree of flood protection required by this Code is considered reasonable for 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 code 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 code shall not create liability on the part of the City of Forest Grove , any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this Code or any administrative decision lawfully made hereunder.~~

C. Coordination with State of Oregon Specialty Codes. Pursuant to the requirement established in Oregon Revised Statutes Chapter 455 that the City administers and enforces the State of Oregon Specialty Codes, the City does hereby acknowledge that the Oregon Specialty Codes contain certain provisions that apply to the design and construction of building and structures located in special flood hazard areas (SFHAs). Therefore, this ~~ordinance~~ Code is intended to be administered in conjunction with the Oregon Specialty Codes.

D. Compliance.

1. All development within special flood hazard areas is subject to the terms of this Code and required to comply with its provisions and all other applicable regulations.

2. Penalties for noncompliance. No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this Code and other applicable regulations. Violations of the provisions of this Code by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute and infraction subject to the penalties described in Forest Grove Code of Ordinances §10.99. Nothing contained herein shall prevent the City from taking such lawful actions as necessary to prevent or remedy any violation.

~~Penalties for noncompliance.~~

E. Abrogation and Severability.

1. Abrogation. This Code is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Code and another code, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

2. Severability. This Code and the various parts thereof are hereby declared to be severable. If any section clause, sentence, or phrase of the Code is held to be invalid or unconstitutional by any court of competent jurisdiction, then the said holding shall in no way effect the validity of the remaining portions of this Code.

F. Interpretation. In the interpretation and application of this Code, all provisions shall be:

1. Considered as minimum requirements;

2. Liberally construed in favor of the governing body; and

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

G. Warning and Disclaimer of Liability.

1. Warning. The degree of flood protection required by this Code is considered reasonable for 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 Code 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.

~~1.~~2. Disclaimer of Liability. This Code shall not create liability on the part of the City of Forest Grove, any officer or employee thereof, or the Federal Insurance Administrator for any flood damages that result from reliance on this Code or any administrative decision lawfully made hereunder.

§ ~~17.8.325~~ 17.8.330 ~~DESIGNATION, DUTIES AND RESPONSIBILITIES OF THE CITY ENGINEER~~ FLOODPLAIN MANAGEMENT ADMINISTRATION.

A. Designation of the Floodplain Administrator. The City Engineer is hereby appointed to administer~~, and~~ implement, and enforce this Code by granting or denying development permit~~s applications~~ in accordance with its provisions. The Floodplain Administrator may delegate authority to implement these provisions.

B. Duties and Responsibilities of the Floodplain Administrator. The duties of the ~~City Engineer~~ Floodplain Administrator, or their designee, shall include, but not be limited to:

1. ~~1.~~ Permit Review. Review~~ing~~ all development permits to:

a. ~~d~~Determine that the permit requirements of this ~~Code~~ Code have been satisfied;

b. ~~2. Reviewing all development permits to d~~Determine that all other required ~~necessary permits have been obtained from those federal, state or~~ local, state, and federal permits have been obtained and approved ~~governmental agencies from which prior approval is required~~;

c. Determine if the proposed development is located in a floodway. ~~3. Reviewing all development permits to determine if the proposed development is located in the floodway .~~

i. If located in the floodway~~.~~, ~~ensure~~ assure that the ~~encroachment~~floodway provisions of ~~§ 17.8.345~~ the Floodways section this Code are met; and

ii. Determine if the proposed development is located in an area where Base Flood Elevation (BFE) data is available either through the Flood Insurance Study (FIS) or from another authoritative source. If BFE data is not available then ensure compliance with the provisions of the Use of Other Base Flood Elevation Data section of this Code; and;

iii. Provide to building officials the Base Flood Elevation (BFE) applicable to any building requiring a development permit.

~~4. Providing the base flood elevation as has been determined in accordance with § 17.8.315B., Basis for Establishing Areas of Special Flood Hazard to the Building Official , along with any freeboard requirements established in § 17.8.335B., Specific Standards.~~

d. Determine if the proposed development qualifies as a substantial improvement as defined in the Floodplain Management Code.

e. Determine if the proposed development is a watercourse alteration. If a watercourse alteration is proposed, ensure compliance with the provisions of the Alteration of Watercourses section of this Code.

f. Determine if the proposed development activity includes the placement of fill or excavation.

~~a.~~g. Determine whether the proposed development activity complies with No Net Loss standards of this Code.

~~C. Use of other base flood data in "A" Zones. When base flood elevation data has not been provided in accordance with § 17.8.315B., Basis for Establishing the Areas of Special Flood Hazard , the City Engineer 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 §§ 17.8.335B., Specific Standards and 17.8.345, Floodways .~~

2. ~~D.~~ Information to be obtained and maintained. The following information shall be obtained and maintained and shall be made available for public inspection as needed:

a. The actual elevation (in relation to mean sea level) of the lowest floor (including basements) and all attendant utilities of all new or substantially improved structures where Base Flood Elevation (BFE) data is provided through the Flood Insurance Study (FIS), Flood Insurance Rate Map (FIRM) or obtained in accordance with the Use of Other Base Flood Elevation Data section of this Code.

~~1. Where base flood elevation data is provided through the Flood Insurance Study , FIRM or as required in § 17.8.325, the City Engineer shall obtain and record the actual elevation (in relation to mean sea level) of the lowest floor (including basements and below-grade crawlspaces)~~

~~of all new or substantially improved structures , and whether or not the structure contains a basement .~~

b. The elevation (in relation to mean sea level) of the natural grade of the building site for a structure prior to the start of construction and the placement of any fill and ensure that the requirements of §17.8.350(B)(1)(b) and, §17.8.340, are adhered to.

c. Upon placement of the lowest floor of a structure (including basement) but prior to further vertical construction, documentation, prepared and sealed by a professional licensed surveyor or engineer, certifying the elevation (in relation to mean sea level) of the lowest floor (including basement).

d. Where base flood elevation data are utilized, As-built certification of the elevation (in relation to mean sea level) of the lowest floor including basement) prepared and sealed by a professional licensed surveyor or engineer, prior to final inspection.

e. Maintain all Elevation Certificates (EC) submitted to the City of Forest Grove.

f. The elevation (in relation to mean sea level) to which the structure and all attendant utilities were floodproofed for all new or substantially improved floodproofed structures where allowed under this Code and where Base Flood Elevation (BFE) data is provided through the FIS, FIRM, or obtained in accordance with §17.8.335(A)(7).

g. All floodproofing certificates required under this Code.

h. All variance actions, including justification for their issuance.

i. All hydrologic and hydraulic analyses performed as required under this section.

j. All Substantial Improvement and Substantial Damage calculations and determinations as required under §17.8.330(B)(3)(d).

k. Documentation of how no net less standards have been met. (see §17.8.350).

l. All records pertaining to the provisions of this Code.

~~2. For all new or substantially improved floodproofed structures where base flood elevation data is provided through the Flood Insurance Study , FIRM or as required in § 17.8.325, the City Engineer shall:~~

~~a. Verify and record the actual elevation (in relation to mean seal level);~~

~~b. Maintain the floodproofing certifications required in § 17.8.320B.3.; and~~

Commented [DR1]: Insert revised code section citation here.

Commented [DR2]: Add revised code section here.

~~c. Maintain for public inspection all records pertaining to the provisions of this Code.~~

~~E. Alteration of watercourses.~~

~~1. Development shall not diminish the flood-carrying capacity of a watercourse. If any watercourse will be altered or relocated as a result of the proposed development, the applicant shall submit certification by a registered professional engineer that the flood-carrying capacity of the watercourse will not be diminished.~~

~~2. The City Engineer shall:~~

~~a. Notify adjacent communities, the Department of Land Conservation and Development and other appropriate state and federal agencies, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration; and~~

~~b. Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.~~

~~3. Applicants shall obtain a Conditional Letter of Map Revision (CLOMR) from FEMA before any encroachment, including fill, new construction, substantial improvement or other development, in the regulatory floodway is permitted. The applicant shall be responsible for preparing technical data to support the CLOMR application any paying any processing or application fees to FEMA.~~

~~F.~~ 3. Requirement to notify other entities and submit new technical data.

~~a~~1. Community Boundary Alterations. The Floodplain Administrator shall notify the Federal Insurance Administrator in writing whenever the boundary of the City is modified by annexation or the City has otherwise assumed authority or no longer has authority to adopt and enforce floodplain management regulations for a particular area, to ensure that all Flood Hazard Boundary Maps (FHBM) and Flood Insurance Rate Maps (FIRM) accurately represent the City's boundaries. Notification shall include a copy of the map of the City suitable for reproduction, clearly delineating the new City limits or new area for which the community has assumed or relinquished floodplain management regulation authority.

b. Watercourse Alterations.

i. Notify adjacent communities, the Oregon Department of Land Conservation and Development, and other appropriate state and federal agencies, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration. This notification shall be provided by the applicant to the Federal Insurance Administration as a Letter of Map Revision (LOMR) along with either:

1. A proposed maintenance plan to assure the flood carrying capacity within the altered or relocated portion of the watercourse is maintained; or

2. Certification by a registered professional engineer that the project has been designed to retain its flood carrying capacity without periodic maintenance.

ii. The applicant shall be required to submit a Conditional Letter of Map Revision (CLOMR) when required under §17.8.330(B)(3)(c). Ensure compliance with all applicable requirements in §17.8.330(B)(3)(c) and §17.8.335(A)(1).

c. Requirement to submit new technical data.

i. The City's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but no later than six months after the date such information becomes available, a community shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data in accordance with Title 44 of the Code of Federal Regulations (CFR), Section 65.3. The City may require the applicant to submit such data and review fees required for compliance with this section through the applicable FEMA Letter of Map Change (LOMC) process.

ii. The Floodplain Administrator shall require a Conditional Letter of Map Revision prior to the issuance of a floodplain development permit for:

1. Proposed floodway encroachments that increase the base flood elevation; and

2. Proposed development which increases the base flood elevation by more than one foot in areas where FEMA provided base flood elevations but no floodway.

iii. An applicant shall notify FEMA within six (6) months of project completion when an applicant has obtained a Conditional Letter of Map Revision (CLOMR) from FEMA. This notification to FEMA shall be provided as a Letter of Map Revision (LOMR).

~~The City Engineer shall:~~

~~a. Notify FEMA within six months of project completion when an applicant had obtained a Conditional Letter of Map Revision (CLOMR) from FEMA, or when development altered a watercourse, modified floodplain boundaries or modified base flood elevations. This notification shall be provided as a Letter of Map Revision (LOMR) ; and~~

~~b. Be under no obligation to sign the Community Acknowledgment Form, which is part of the CLOMR-/LOMR- application , until the applicant demonstrates that the project will or has met the requirements of this Code and all applicable State and Federal laws.~~

~~2. The applicant shall be responsible for preparing technical data to support the LOMR- application and paying any processing or application fees to FEMA.~~

d. Substantial improvement and substantial damage assessments and determinations. Conduct Substantial Improvement (SI) (as defined in §17.8.320 reviews for all structural development proposal applications and maintain a record of SI calculations within permit files in accordance with §17.8.330(B)(2). Conduct Substantial Damage (SD) (as defined in §17.8.320) assessments when structures are damaged due to a natural hazard event of other causes. Make SD determinations whenever structures within the Special Flood Hazard Area (as established in §17.8.325(B) are damaged to the extent that 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.

~~G. Non-conversion of enclosed areas below the lowest floor . To ensure that enclosed areas below the lowest floor- continue to be used solely for parking vehicles, limited storage, or access- to the building- and not be finished for use as human habitation/recreation/bathrooms, etc., the City Engineer- shall:~~

~~1. Determine which applicants for new construction and/or substantial improvements have fully-enclosed areas below the lowest floor that are five feet or higher; and~~

~~2. Require such applicants to enter in a "Non-Conversion Deed Declaration for Construction within Flood Hazard Areas" or equivalent. The deed declaration shall be recorded with Washington County and shall be in a form acceptable to the City Engineer .~~

~~H. Interpretation of FIRM boundaries. The City Engineer- shall 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 § 17.8.330.~~

~~§ 17.8.320 ESTABLISHMENT OF DEVELOPMENT PERMIT~~.

C. Establishment of Development Permit

~~A.~~ 1. ~~-~~Floodplain ~~D~~development ~~-~~permit required. A development ~~-~~permit shall be obtained before construction or development ~~-~~begins within any area of special flood hazard~~-~~ established in § 17.8.315B. The permit shall be for all structures including manufactured ~~homes~~ dwellings, ~~as set forth in the definitions~~ and for

all other development ~~including fill and other activities, also~~ as ~~set forth in the definitions~~ defined in §17.8.320~~.~~, including fill and other development activities.

~~B~~2. Application for development permit. Application~~-~~ for a development ~~-~~permit shall be made on forms furnished by the ~~Engineering Department~~ City's Floodplain Administrator 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:

~~1.~~a. In riverine flood zones, the proposed ~~E~~elevation (in relation to mean sea level), of the lowest floor (including basement~~-~~) ~~of all structures~~ and all attendant utilities of all new and substantially improved structures; in accordance with the requirements of §17.8.330(B)(2)~~-~~;

~~2~~b. Proposed ~~E~~elevation in relation to mean sea level to which any non-residential structure will be floodproofed.~~of floodproofing in any structure~~ ;

~~3~~c. Certification by a registered professional engineer or architect licensed in the State of Oregon that the floodproofing methods for any nonresidential structure meet the floodproofing criteria for non-residential structures in § 17.8.335(B).(3).; and

d. Description of the extent to which a watercourse will be altered or relocated. ~~as a result of proposed development .~~

e. Base Flood Elevation data for subdivision proposals or other

f. Substantial improvement calculation for any improvement, addition, reconstruction, renovation, or rehabilitation of an existing structure.

g. The amount and location of any fill or excavation activities proposed.

~~C. Land below the elevation of the base flood shall be placed in open space or parking lot and landscaped areas if within the developed portion of the site .~~

~~§ 17.8.330 VARIANCE PROCEDURE.~~

D. Variance procedure. The issuance of a variance under this section is for floodplain management purposes only. Flood insurance premium rates are determined by federal statute according to actuarial risk and will not be modified by the granting of a variance.

1. Conditions for variances

a. Generally, variances may be issued 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, in conformance with the provisions of §17.8.330(D)(1)(c)and (e)and §17.8.330(D)2). As the lot size increases beyond one-half acre, the technical justification required for issuing a variance increases.

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

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

d. 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; and

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 laws or ordinances.

e. Variances may be issued by the City for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that the criteria of section 4.4.1B – D are met, and the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

f. Variances shall not be issued unless it is demonstrated that the development will not result in net loss of the following proxies for the three floodplain functions in the SFHA: undeveloped space; pervious surface; or trees 6 inches dbh or greater.

2. Variance notification. Any applicant to whom a variance is granted shall be given written notice that the issuance of a variance to construct a structure below the Base Flood Elevation will result in increased premium rates for flood insurance and that such construction below the base flood elevation increases risks to life and property. Such notification and a record of all variance actions, including justification for their issuance shall be maintained in accordance with §17.8.330(B)(2).

~~A. Appeal Board. The Planning Commission shall hear and decide appeals and requests for variances from the requirements of this Code. The Planning Commission shall hear and decide appeals when it is alleged there is an error in any requirement, decision or determination made by the City of Forest Grove in the enforcement or administration of this Code.~~

~~B. Any affected party may appeal the decision of the Planning Commission to the City Council , as provided in § 17.1.640.~~

~~C. In passing upon such applications , the Planning Commission shall consider all technical evaluations, all relevant factors, standards specified in other sections of this Code, and:~~

~~1. The danger that materials may be swept onto other lands to the injury of others;~~

~~2. The danger to life and property due to flooding or erosion damage;~~

~~3. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;~~

~~4. The importance of the services provided by the proposed facility to the community;~~

~~5. The necessity to the facility of a waterfront location, where applicable;~~

~~6. The availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;~~

~~7. The compatibility of the proposed use with existing and anticipated development ;~~

~~8. The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;~~

~~9. The safety of access to the property in times of flood for ordinary and emergency vehicles;~~

~~10. 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~~

~~11. 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.~~

~~D. Upon consideration of the factors of § 17.8.330C. and the purposes of this Code, the Planning Commission may attach such conditions to the granting of variances as it deems necessary to further the purposes of this Code.~~

~~E. The City Engineer shall maintain the records of all appeal actions and report any variances to the Federal Insurance Administration upon request.~~

~~F. Conditions for variances.~~

~~1. 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 (1-11) in § 17.8.330C. have been fully considered. As the lot size increases the technical justification required for issuing the variance increases.~~

~~2. Variances may be issued for the reconstruction, rehabilitation, or restoration of structures listed on the National Register of Historic Places or the Statewide Inventory of Historic Properties, without regard to the procedures set forth in this section.~~

~~3. Variances shall not be issued within a designated floodway if any increase in flood levels during the base flood discharge would result.~~

~~4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.~~

~~5. Variances shall only be issued upon:~~

~~a. A showing of good and sufficient cause;~~

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

~~c. 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 as identified in § 17.8.330C., or conflict with existing local laws or codes.~~

~~6. Variances as interpreted in the National Flood Insurance Program are based on the general zoning law principle that they pertain to a physical piece or 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.~~

~~7. Variances may be issued for nonresidential buildings in very limited circumstances to allow a lesser degree of floodproofing than watertight or dry-floodproofing, where it can be determined that such action will have low damage potential, complies with all other variance criteria except § 17.8.330F.1., and otherwise complies with § 17.8.335A.1.3. of the General Standards.~~

~~8. 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 d elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.~~

§ 17.8.335 PROVISIONS FOR FLOOD HAZARD REDUCTION.

A. General standards. In all ~~areas of~~ special flood ~~-~~hazard~~s~~ areas, the no net loss standards and the following standards ~~are required~~ shall be adhered to:~~.~~

1. ~~1.~~Alteration of watercourses. Require that the flood carrying capacity within the altered or relocated portion of said watercourse is maintained. Require that maintenance is provided within the altered or relocated portion of said watercourse to ensure that the flood carrying capacity is not diminished. Require compliance with Section §17.8.330(B)(3)(b) and §17.8.330(B)(3)(c).

2. Anchoring.

a. All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

b. All manufactured ~~homes~~ dwellings shall be anchored per §17.8.335(B)(3)(d)~~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 (Refer to FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques).~~

~~2.~~3. 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.

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

~~3.~~4. Utilities and equipment.

a. Water Supply, Sanitary Sewer, and On-Site Waste Disposal Systems

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

~~b~~ii. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters; and

~~c~~iii. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding consistent with the Oregon Department of Environmental Quality.

b. Electrical, Mechanical, Plumbing, and Other Equipment.

i. Electrical, heating, ventilating, air-conditioning, plumbing, duct systems, and other equipment and service facilities shall be elevated at or above the base flood elevation or shall be designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during conditions of flooding.

ii. In addition, electrical, heating, ventilating, air-conditioning, plumbing, duct systems, and other equipment and service facilities shall, if replaced as part of a substantial improvement meet all the requirements of this section and not be mounted on or penetrate through breakaway walls.

5. Tanks

a. Underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood.

b. Above ground tanks shall be installed at or above the base flood level or shall be anchored to prevent flotation, collapse, and lateral movement under conditions of the base flood.

~~4.~~6. Subdivision proposals and other proposed developments.

a. ~~a.~~ All new subdivision proposals and other proposed developments, including proposals for manufactured dwelling parks and subdivisions, greater than 50 lots or 5 acres, whichever is the lesser, shall include within such proposals Base Flood Elevation data. ~~shall be consistent with the need to minimize flood damage~~;

b. All new subdivision proposals and other proposed new developments, including proposals for manufactured dwelling parks and subdivisions shall:

i. Be consistent with the need to minimize flood damage.

ii. Have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.

iii. Have adequate drainage provided to reduce exposure to flood hazards.

iv. Comply with no net loss standards in §17.8.350.

~~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 five acres (whichever is less).~~

~~5. Review of building permits . Where elevation data is not available either through the Flood Insurance Study , FIRM or from another authoritative source (§ 17.8.325C.),~~

~~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 grade in these zones may result in higher insurance rates.~~

~~B. 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 § 17.8.315B., Basis for Establishing the Areas of Special Flood Hazard , or § 17.8.325C., Use of Other Base Flood Data in "A" Zones, the following provisions are required:~~

~~1. Residential construction.~~

~~a. New construction and substantial improvement of any residential structure shall have the lowest floor , including basement , elevated to a minimum of one foot 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 be 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.~~

~~2. Manufactured dwellings .~~

~~a. Manufactured dwellings supported on solid foundation walls shall be constructed with flood openings that comply with § 17.8.335A.1.b. above.~~

~~b. The bottom of the longitudinal chassis frame beam in "A" zones, shall be at or above BFE;~~

~~c. The manufactured dwelling shall be anchored to prevent flotation, collapse and lateral movement during the base flood . Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (Refer to FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques); and~~

~~d. Electrical crossover connections shall be a minimum of 12 inches above BFE.~~

~~3. Nonresidential construction. New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor ,~~

including basement , elevated at or above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

a. Be floodproofed so that below 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 § 17.8.320B.3.;

d. Nonresidential structures that are elevated, not floodproofed, must meet the same standards for space below the lowest floor as described in § 17.8.335B.1.b.;

e. Applicants floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g., a building floodproofed to the base flood level will be rated as one foot below.

f. Applicants shall supply a Maintenance Plan for the entire structure to include but not limited to: exterior envelope of structure ; all penetrations to the exterior of the structure ; all shields, gates, barriers or components designed to provide floodproofing protection to the structure ; all seals or gaskets for shields, gates, barriers or components; and, the location of all shields, gates, barriers and components as well as all associated hardware, and any materials or specialized tools necessary to seal the structure .

g. Applicants shall supply an Emergency Action Plan (EAP) for the installation and sealing of the structure prior to a flooding event that clearly identifies what triggers the EAP and who is responsible for enacting the EAP.

4. Recreational vehicles . Recreational vehicles placed on sites are required to:

a. Be on the site for fewer than 180 consecutive days; and

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 § 17.8.335B.2. above and the elevation and anchoring requirements for manufactured homes.

5. Accessory structures . Relief from elevation or floodproofing as required in § 17.8.335B.1. or B.3. above may be granted for accessory structures that are:

a. Less than 200 square feet and do not exceed one story;

b. Not temperature controlled;

c. Not used for human habitation and are used solely for parking of vehicles or storage of items having low damage potential when submerged; not used to store toxic material, oil or gasoline, or any priority persistent pollutant identified by the Oregon Department of Environmental Quality unless confined in a tank installed in compliance with this Code or stored at least one foot above Base Flood Elevation;

d. Located and constructed to have low damage potential;

e. Constructed with materials resistant to flood damage;

f. Anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood ; and

g. Constructed to equalize hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwater. Designs for complying with this requirement must be certified by a licensed professional engineer or architect or:

i. Provide a minimum of two openings with a total net area of not less than one square inch for every square foot of enclosed area subject to flooding ;

ii. The bottom of all openings shall be no higher than one foot above the higher of the exterior or interior grade or floor immediately below the opening;

iii. The openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic flow of floodwater in both directions without manual intervention; and

iv. Be constructed with electrical and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood .

6. Below-grade crawl spaces . Below-grade crawlspaces are allowed subject to the following standards as found in FEMA Technical Bulletin 11-01 Crawlspace Construction for Buildings Located in Special Flood Hazard Areas:

a. The building must be designed and adequately anchored to resist flotation, collapse and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy. Hydrostatic loads and the effects of buoyancy can usually be addressed through the required openings stated in subsection b. below. Because of hydrodynamic loads, crawlspace construction is not allowed in areas with flood velocities greater than five feet per second unless the design is reviewed by a qualified design professional, such as a registered architect or professional engineer. Other types of foundations are recommended for these areas.

b. The crawlspace is an enclosed area below the base flood elevation (BFE) and, as such, must have openings that equalize hydrostatic pressures by allowing the automatic entry and exit of floodwaters. The bottom of each flood vent opening can be no more than one foot above the lowest adjacent exterior grade .

c. Portions of the building below the BFE must be constructed with materials resistant to flood damage. This includes not only the foundation walls of the crawlspace used to elevate the building , but also any joists, insulation or other materials that extend below the BFE. The recommended construction practice is to elevate the bottom of joists and all insulation above BFE.

d. Any building utility systems within the crawlspace must be elevated above BFE or designed so that floodwaters cannot enter or accumulate within the system components during flood conditions. Ductwork, in particular, must either be placed above the BFE or sealed from floodwaters.

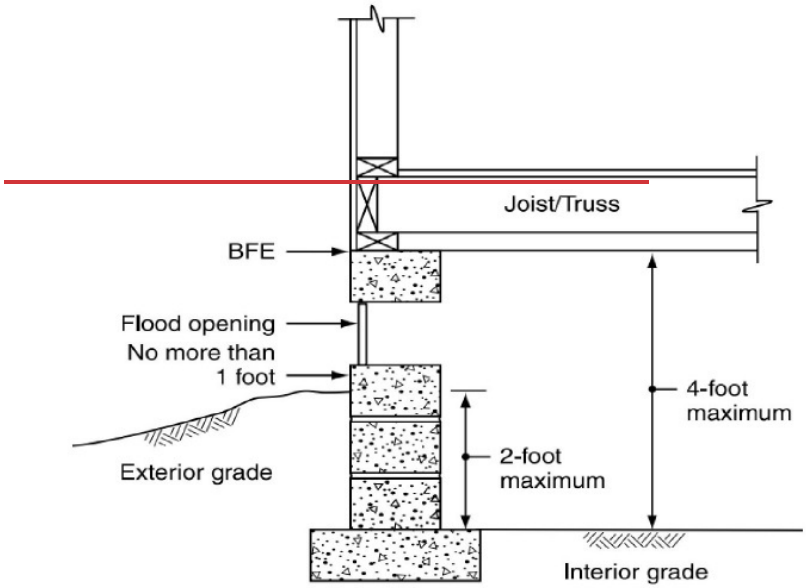
e. The interior grade of a crawlspace below the BFE must not be more than two feet below the lowest adjacent exterior grade .

f. The height of the below-grade crawlspace , measured from the interior grade of the crawlspace to the top of the crawlspace foundation wall must not exceed four feet at any point. The height limitation is the maximum allowable unsupported wall height according to the engineering analyses and building code requirements for flood hazard areas.

g. There must be an adequate drainage system that removes floodwaters from the interior area of the crawlspace. The enclosed area should be drained within a reasonable time after a flood event. The type of drainage system will vary because of the site gradient and other drainage characteristics, such as soil types. Possible options include natural drainage through porous, well- drained soils and drainage systems such as perforated pipes, drainage tiles or gravel or crushed stone drainage by gravity or mechanical means.

h. The velocity of floodwaters at the site should not exceed five feet per second for any crawlspace. For velocities in excess of five feet per second, other foundation types should be used. For more detailed information, refer to FEMA Technical Bulletin 11-01.

Figure 8-6: Limitations on Below-Grade Crawlspaces



~~Residential structures must be elevated a minimum of one foot above the Base Flood Elevation (BFE).~~

i. Use of base flood elevation data

a. When base flood elevation data has not been provided in accordance with §17.8.325(B) the local floodplain administrator shall obtain, review, and reasonably utilize any Base Flood Elevation data available from a federal, state, or other source, in order to administer §17.8.335. All new subdivision proposals and other proposed new development developments, including proposals for manufactured dwelling parks and subdivisions, must meet the requirements of §17.8.335(A)(6).

b. Base Flood Elevations shall be determined for development proposals that are 5 acres or more in size or are 50 lots or more, whichever is the lesser in any A zone that does not have an established base flood elevation. Development proposals located within a riverine unnumbered A Zone shall be reasonably safe from flooding; the test of reasonableness includes use of historical data, high water marks, FEMA provided Base Level Engineering data, and photographs of past flooding, etc. where available. The elevation of

residential structures and non-residential structures that are not dry floodproofed must be at least two feet above highest adjacent grade. Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.

j. Structures located in multiple or partial flood zones. In coordination with the State of Oregon Specialty Codes:

a. When a structure is located in multiple flood zones on the community's Flood Insurance Rate Maps (FIRM) the provisions for the more restrictive flood zones shall apply.

b. When a structure is partially located in a special flood hazard area, the entire structure shall meet the requirements for new construction and substantial improvements.

B. Specific Standards for Riverine Including All Non-Coastal Flood Zones. These specific standards shall apply to all new construction and substantial improvements in addition to the General Standards contained on §17.8.335(A) of this Code and no net loss standards in §17.8.350.

1. Flood openings. All new construction and substantial improvements with fully enclosed areas below the lowest floor, excluding basements, are subject to the following requirements. Enclosed areas below the Base Flood Elevation, including crawl spaces shall:

a. Be designed to automatically equalize hydrostatic flood forces on walls by allowing for entry and exit of floodwaters.

b. Be used solely for parking, storage, or building access.

c. Be certified by a registered professional engineer or architect or meet or exceed all of the following minimum criteria:

i. A minimum of two openings;

ii. The total net are of non-engineered openings shall be not less than one square inch for each square foot of enclosed area, where the enclosed area is measured on the exterior of the enclosure walls;

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

iv. Openings may be equipped with screens louvers, valves or other coverings or devices provided that they shall allow the automatic flow of floodwater into and out of the enclosed areas and shall be accounted for in the determination of the net open area; and

v. All additional higher standards for flood openings in the State of Oregon Residential Specialty Codes Section R322.2 shall be complied with when applicable.

2. Garages

a. Attached garages may be constructed with the garage floor slab beknow the Base Flood Elevation (BFE) in riverine flood zones, if the following requirements are met:

i. If located within a floodway the proposed garage must comply with the requirements of §17.8.340;

ii. The floors are at or above grade on not less than one side;

iii. The garage is used solely for parking; building access, and/or storage;

iv. The garage is constructed with flood openings in compliance with §17.8.335(B)(1) to equalize hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit to floodwater;

v. The portions of the garage constructed below Base Flood Elevation are constructed with materials resistant to flood damage.

vi. The garage is constructed in compliance with the standards in §17.8.335(A); and

vii. The garage is constructed with electrical and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood.

b. Detached garages must be constructed in compliance with the standards for appurtenant structures in §17.8.335(B)(3)(f) or non-residential structures in §17.8.335(B)(3)(c) depending on the square footage of the garage.

~~2.~~3. Riverine (Non-Coastal Special Flood Hazard Areas With Base Flood Elevations. In addition to the general standards listed in §17.8.335(A) the following specific standards shall apply in Riverine (non-coastal) special flood hazard areas with Base Flood Elevations (BFE): Zones A1-A30, AH, and AE.

~~**§ 17.8.340 BEFORE REGULATORY FLOODWAY**~~.

a. Before Regulatory Floodway. In areas 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 and will not result in the net loss of storage volume. When determined that structural elevation is not possible and where the placement of fill cannot meet the above standard, impacts to undeveloped space must adhere to the no net loss standards in §17.8.350(3).

b. Residential construction.

i. New construction, conversion to, and substantial improvement of any residential structure shall have the lowest floor, including basement elevated at least one foot above the Base Flood Elevation.

ii. Enclosed areas below the lowest floor shall comply with the flood opening requirements in §17.8.335(B)(1).

c. Non-residential construction.

i. New construction, conversion to and substantial improvement of any commercial, industrial, or other on-residential structure shall:

1. Have the lowest floor, including basement elevated at or above the Base Flood Elevation; or

2. Together with the attendant utility and sanitary facilities:

a. Be floodproofed so that below 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; and

c. Be certified by a registered professional engineering or architect that the design methods of construction are in accordance with accepted standards of practice for meeting provisions of this section based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the Floodplain Administrator as set forth in §17.8.330(B)(2).

3. Non-residential structures that are elevated, not floodproofed, shall comply with the standards for enclosed areas below the lowest floor in §17.8.335(B)(1).

4. Applicants floodproofing non-residential building shall be notified that flood insurance premiums will be based on rates that are one foot below floodproofed level (e.g. building floodproofed to the base flood level will be rates as one foot below).

d. Manufactued Dwellings.

1. Manufactured dwellings to be placed (new or replacement) or substantially improved that are supposed on solid foundation walls shall be constructed with flood openings that comply with §17.8.335(B)(1).

2. The bottom of the longitudinal chassis frame beam shall be at or above Base Flood Elevation;

3. Manufactured dwellings to be placed (new or replacement) or substantially improved shall be anchored to prevent flotation, collapse, and lateral movement during the base flood. Anchoring methods may include but are not limited to, use of over-the-top or frame ties to ground anchors. See FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques, and:

4. Electrical crossover connections shall be a minimum of twelve inches above Base Flood Elevation.

e. Recreational Vehicles. Recreation vehicles placed on sites are required to:

1. Be on the site for fewer than 180 consecutive days; and

2. 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.

3. Meet the requirements of §17.8.335(B)(3)(d), including the anchoring and elevation requirements for manufactured dwellings.

f. Appurtenant (Accessory) Structures. Relief from floodproofing requirements for residential and non-residential structures in Riverine (Non-Coastal) flood zones may be granted for appurtenant structures that meet the following requirements:

1. Appurtenant structures located partially or entirely within the floodway must comply with requirements for development within a floodway found in §17.8.340.

2. Appurtenant structures must only be used for parking, access, and/or storage and shall not be used for human habitation.

3. In compliance with State of Oregon Specialty Codes, appurtenant structures on properties that are zoned residential are limited to one-story structures less than 200 square feet, or 400 square feet if the property is greater than two acres in area and the proposed appurtenant structure will be located a minimum of 20 feet from all property lines. Appurtenant structures on properties that are zoned as non-residential are limited to 120 square feet.

4. The portions of the appurtenant structure located below the Base Flood Elevation must be built using flood resistant materials;

5. The appurtenant structure must be adequately anchored to prevent flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood;

6. The appurtenant structure must be designed and constructed to equalize hydrostatic flood forces on exterior walls and comply with the requirements for flood openings in §17.8.335(B)(1);

7. Appurtenant structures shall be located and constructed to have low damage potential;

8. Appurtenant structures shall not be used to store toxic material, oil, or gasoline, or any priority persistent pollutant identified by the Oregon Department of Environmental Quality unless confined to a tank installed in compliance with §17.8.335(A)(5); and

9. Appurtenant structures shall be constructed with electrical, mechanical, and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood.

§ ~~17.8.345~~17.8.340. STANDARDS FOR FLOODWAYS.

Located within areas of special flood hazard established in § 17.8.315B. 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. ~~Except as provided in paragraph C. below,~~ ~~p~~Prohibit encroachments, including fill, new construction~~.~~, ~~substantial improvements ,~~ and other development within the adopted regulatory floodway unless:

1. ~~C~~certification by a registered professional civil engineer is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that encroachment~~s~~ shall not result in any increase in flood levels within the community during the occurrence of the base flood discharge~~.~~; or

2. The City may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that conditional approval has been obtained by the Federal Insurance Administrator through the Conditional Letter of Map Revision (CLOMR) application process, all requirements established under 44 CFR 65.12 are fulfilled, and the encroachment(s) comply with the no net loss standards in §17.8.350.

B. If the requirements of §17.8.340(A) are satisfied, all new construction, substantial improvements, and other development shall comply with all other applicable flood hazard provisions of §17.8.335 and §17.8.350.

~~B. If § 17.8.345A. is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of § 17.8.335, Provisions for Flood Hazard Reduction.~~

~~C. Temporary structures placed in the floodway : Relief from no-rise evaluation, elevation or dry flood -proofing standards may be granted for a non-residential structure placed during the dry season (June – October) and for a period of less than 90 days. A plan for the removal of the temporary structure after the dry season or when a flood event threatens shall be provided. The plan shall include disconnecting and protecting from water infiltration and damage all utilities servicing the temporary structure .~~

~~D. Temporary storage of goods and materials, not including hazardous materials, is allowed in the floodway for a period of less than 90 days within the dry season (June – October).~~

§17.8.345 STANDARDS FOR SHALLOW FLOODING AREAS

Shallow flooding areas appear on FIRMs as AO zones with depth designations or as AH zones with Base Flood Elevations. For AO zones the base flood depths range from one to three feet above ground where a clearly defined channel does not exist, or where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is usually characterized as sheet flow. For both AO and AH zones, adequate drainage paths are required around structures on slopes to guide floodwaters around and away from proposed structures.

A. Standards for AH zones. Development within AH zones must comply with the standards in §17.8.335(A), §17.8.335(B) and §17.8.345.

B. Standards for AO zones. In AO zones, the following provisions apply in addition to the requirements in §17.8.335 and §17.8.345.

1. New construction, conversion to, and substantial improvement of residential structures and manufactured dwellings with AO zones shall have the lowest floor, including basement, elevated above the highest grade adjacent to the building, at a minimum to or above the depth number specified on the Flood Insurance Rate Maps FIRM at least two feet if no depth number is specified. For manufactured dwellings the lowest floor is considered to be the bottom of the longitudinal chassis frame beam.

2. New construction, conversion to, and substantial improvements of non-residential structures within AO zones shall either:

a. Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, at a minimum to or above the depth number specified on the Floor Insurance Rate Maps (FIRMs) at least two feet if no depth number is specified.

b. Together with attendant utility and sanitary facilities, be completely floodproofed to or above the depth number specified on the FIRM or a minimum of two feet above the highest adjacent grade if no depth number is specified, so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and he effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect.

c. Recreational vehicles placed on sites within AO zones on the community's Flood Insurance Rate Map shall either:

1. Be on the site for fewer than 180 consecutive days, and

2. 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

3. Meet the elevation requirements of section 5.2.5.2(A), and the anchoring and other requirements for manufactured dwellings in §17.8.335(B)(3)(d).

d. In AO zones, new and substantially improved appurtenant structures must comply with the standards in Section 5.2.3.6.

e. In AO zones, enclosed areas beneath elevated structures shall comply with the requirements in §17.8.335(B)(1).

§17.8.350 STANDARDS FOR PROCTION OF SPECIAL FLOOD HAZARD AREA FLOODPLAIN FUNCTIONS

The standards described below apply to all special flood hazard areas as defined in §17.8.320:

f. No net loss of the three proxies for floodplain functions

1. No net loss of the three proxies for floodplain functions is required for development in the Special Flood Hazard Area that would reduce undeveloped space, increase impervious surface, or result in a loss of trees that area 6-inches dbh or greater. No net loss can be achieved by first avoiding negative effects of floodplain functions to the degree possible, then minimizing remaining effects, then replacing and/or otherwise compensating for, offsetting, or rectifying the residual adverse effects of the three floodplain functions. Prior to issuance of any **development authorization**, the applicant shall:

a. Demonstrate a legal right by the project proponent to implement the proposed activities to achieve no net loss (e.g., property owner agreement)

b. Demonstrate that financial assurances are in place for the long-term maintenance and monitoring of all projects to achieve no net loss;

c. Include a management plan that identifies the responsible site manager, stipulates which activities are allowed on site, and requires the positing of signage identifying the site as a mitigation area.

2. Compliance with no net loss for undeveloped space or impervious surface is preferred to occur prior to the loss of habitation function but, at a minimum, shall occur concurrent with the loss. To offset the impacts of delay in implementing no net loss, a 25 percent increase in the required minimum area is added for each year no net loss implementation is delayed.

3. No net loss must be provided within, in order of preference: 1) the lot or parcel that floodplain functions were removed from, 2) the same reach of the waterbody where the development is proposed, or 3) the special flood hazard area within the same hydrologically connected area as the proposed development. The table below presents the no net loss ratios, which increase based on the preferences listed above.

No Net Loss Standards

Basic Mitigate Ratios	**Undeveloped Space (ft^3)**	**Impervious Surface (ft^2)**	**Trees (6"<dbh≤20")**	**Trees (20"<dbh≤39")**	**Trees (39"<dbh)**
RBZ and Floodway	2:1*	1:1	3:1*	5:1	6:1
RBZ-Fringe	1.5:1*	1:1	2:1*	4:1	5:1
Mitigation multipliers					
Mitigation onsite to Mitigation offsite, same reach	100%	100%	100%	100%	100%
Mitigation onsite to Mitigation offsite, different reach, same watershed (5th field)	200% *	200%*	200%*	200%	200%

Notes:

- Ratios with asterisks are indicated in the National Marine Fisheries Service (NMFS) Biological Opinion
- Mitigation multipliers of 100% result in the required mitigation occurring at the same value described by the ratios above, while multipliers of 200% result in the required mitigation being doubled. For example, if only 500 square feet of the total 1000 square feet of required pervious surface mitigation can be conducted onsite and in the same reach, the remaining 500 square feet of required pervious surface mitigation occurring offsite at a different reach would double because of the 200% multiplier.
- RBZ impacts must be offset in the RBZ, onsite or offsite.
- Additional standards may apply in the RBZ (See the Riparian Buffer Zone section below).

4. Undeveloped space.

a. Development proposals shall not reduce the fish-accessible and egress-able undeveloped space within the special flood hazard area.

b. A development proposal with an activity that would impact undeveloped space shall achieve no net loss of fish-accessible and egress-able space.

c. Lost undeveloped space must be replaced with fish-accessible and egress-able compensatory volume based on the ratio in Table 1 and the same flood level at which development causes an impact (i.e., plus or minus one-foot of the hydraulic equivalent elevation.

i. Hydraulically equivalent sites must be found within either the equivalent 1-foot elevations or the same flood elevation bands of the development proposal. The flood elevation bands are identified as follows:

1. Ordinary High-Water Mark to 10-year;

2. 10-year to 25-year;

3. 25-year to 50-year; and

4. 50-year to 100-year

ii. Hydrologically connected to the waterbody that is the flooding source;

iii. Designed so that there is no increase in velocity; and

iv. Designed to fill and drain in a manner that minimizes anadromous fish standing to the greatest extent possible.

5. Impervious Surfaces. Impervious surface mitigation shall be mitigated through any of the following options:

a. Development proposals shall not result in a net increase in impervious surface area within the Special Flood Hazard Area, or

b. Use low impact development or green infrastructure to infiltrate and treat stormwater produced by the new impervious surface, as documented by a qualified professional, or

~~a.~~c. If prior methods are not feasible and documented by a qualified professional, stormwater retention is required to ensure no increase in peak volume or flow and to maximize infiltration, and treatment is required to minimize pollutant loading. See §17.8.350(B)(3) for stormwater retention specifications.

6. Trees.

a. Development proposals shall result in no net loss of tress 6-inches dbh or greater within the Special Flood Hazard Area. This requirement does not apply to silviculture where there is no development.

1. Trees of or exceeding 6-inches dbh that are removed from the RBZ, Floodway, or RBZ-fringe must be replaced at the ratios in the table below.

2. Replacement trees must be native species that would occur naturally in the Level III ecoregion of the impact area. (Willamette Valley).

B. Stormwater Management. Any development proposal that cannot mitigate as specified in Section 6.1.2(A) – (B) must include the following:

1. Water quality (pollution reduction) treatment for post-construction stormwater runoff from any net increase in impervious area: and

2. Water quantity treatment (retention facilities) unless the outfall discharges into the ocean.

3. Retention facilities must:

a. Limit discharge to match the pre-development peak discharge rate (i.e. the discharge rate of the site based on its natural groundcover and grade before any development occurred) for the 10-year peak flow using a continuous simulation for flows between 50 percent of the 2-year event and the 10-year flow event (annual series),

b. Treat stormwater to remove sediment and pollutants from impervious surfaces such that at least 80 percent of the suspended solids area removed from the stormwater prior to discharging to the receiving water body.

c. Be designed to not entrap fish and drain to the source of flooding.

d. Be certified by a qualified professional.

4. Stormwater treatment practices for multi-parcel facilities, including subdivisions, shall have an enforceable operation and maintenance agreement to ensure the system functions as designed. This agreement must include:

a. Access to stormwater treatment facilities at the site by the City for the purpose of inspection and repair;

b. A legally binding document specifying the parties responsible for the proper maintenance of the stormwater treatment facilities. The agreement must be recorded and bind subsequent purchasers and sellers even if they were not party to the original agreement.

c. For stormwater controls that include vegetation and/or soil permeability, the operation and maintenance manual must include maintenance of these elements to maintain the functionality of the feature.

d. The responsible party for the operation and maintenance of the stormwater facility shall have the operation and maintenance manual on site and available at all times. Records of the maintenance and repairs shall be retained and made available for inspection by the City for five years.

C. Activities exempt from no net loss standards. The following activities are not subject to the no net loss standards in Section 6.1; however, they may not be exempt from floodplain development permit requirements:

1. Normal maintenance of structures, such as re-roofing and replacing siding, provided there is no change in the footprint or expansion of the roof of the structure.

2. Normal street, sidewalk, and road maintenance, including filling potholes, repaving, and installing signs and traffic signals, that does not alter contours, use, or alter culverts. Activities exempt do not include expansion of paved areas.

3. Routine maintenance of landscaping that does not involve grading, excavation, or filling.

4. Routine agricultural practices such as tilling, plowing, harvesting, soil amendments, and ditch cleaning that does not alter the ditch configuration provided the spoils are removed from the Special Flood Hazard Area or tilled into fields as a soil amendment.

5. Routine silviculture practices that do not meet the definition of development, including harvesting of trees as long as root balls are left in place and forest road construction or maintenance that does not alter contours, use or alter culverts.

6. Removal of noxious weeds and hazard trees, and replacement of non-native vegetation with native vegetation.

7. Normal maintenance of above ground utilities and facilities, such as replacing downed power lines and utility poles provided there is no net change in footprint.

8. Normal maintenance of a levee or other flood control facility prescribed in the operations and maintenance plan for the levee or flood control facility. Normal maintenance does not include repair from flood damage, expansion of the prism, expansion of the face or toe or addition of protection on the face or toe with rock armor.

9. Habitat restoration activities.

D. Riparian Buffer Zone (RBZ)

1. The Riparian Buffer Zone is measured from the ordinary high-water line of a fresh waterbody (lake; pond; ephemeral, intermittent, or perennial stream) or mean higher-high water of a marine shoreline or tidally influenced river reach to 170 feet horizontally on each side of the stream or inland of the MHHW. The riparian buffer zone includes the area between these outer boundaries on each side of the stream, including the stream channel.

2. Habitat restoration activities in the RBZ are considered self-mitigating and are not subject to the no net loss standards described above.

3. Functionally dependent uses are only subject to the no net loss standards for development in the RBZ. Ancillary features that are associated with but do not directly impact the functionally dependent use is the RBZ (including manufacturing support facilities and restrooms) are subject to the beneficial gain standard in addition to no net loss standards.

4. Any other use of the RBZ requires a greater offset to achieve no net loss of floodplain functions, on top of the no net loss standards described aboce, through the beneficial gain standard.

5. Under FEMA's beneficial gain standard, an area within the same reach of the project and equivalent to 5% of the total project area within the RBZ shall be planted with native herbaceous and shrub vegetation and designated as open space.

§ 17.8.3505 CRITICAL FACILITY.

Construction of new critical facilities shall be, to the extent possible, located outside the limits of the Special Flood Hazard Area (SFHA) (100-year floodplain). Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available. Critical facilities constructed within the SFHA shall have the lowest floor elevated three feet above BFE or to the height of the 500-year flood, whichever is higher. Access to and from the critical facility should also be protected to the height utilized above. Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the extent possible.

§ 17.8.3555560 ENVIRONMENTAL PRACTICE.

—All property owners, developers or other persons proposing to modify land in the city limits of Forest Grove are encouraged to integrate the habitat-friendly development practices listed in Table 8-1 as part of any modification of the site-. Those practices within road rights-of-way or other public property shall be approved by the City Engineer-. Other practices shall be approved by the Community Development Department. Said approvals shall be obtained:

A. Where no land use permit is required, prior to any physical modification of the site-;

B. Where any land use permit is required by the Development Code, concurrent with an approval of the permit; or

C. Where there is a Natural Resource Area and alternative discretionary development standards are used pursuant to the requirements of § 17.5.040.

Table 8-1: Habitat-Friendly Development Practices*

Part (a): Design and Construction Practices to Minimize Hydrologic Impacts

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Part (a): Design and Construction Practices to Minimize Hydrologic Impacts

1. Amend disturbed soils to original or higher level of porosity to regain infiltration and stormwater storage capacity.

2. Use pervious paving materials for residential driveways-, parking lots, walkways and within centers of cul-de-sacs-.

3. Incorporate stormwater management in road rights-of-way.

4. Landscape with rain gardens to provide on-lot -detention, filtering of rainwater and groundwater recharge.

5. Use green roofs for runoff reduction, energy savings, improved air quality and enhanced aesthetics.

6. Disconnect downspouts from roofs and direct the flow to vegetated infiltration/filtration areas such as rain gardens.

7. Retain rooftop runoff in a rain barrel for later on-lot- use in lawn and garden watering.

8. Use multi-functional open drainage systems in lieu of more conventional curb-and-gutter systems.

9. Use bioretention cells as rain gardens in landscaped parking lot islands to reduce runoff volume and filter pollutants.

10. Apply a treatment train approach to provide multiple opportunities for stormwater treatment and reduce the possibility of system failure.

11. Reduce sidewalk width and grade- them such that they drain to the ~~front yard~~front yard of a residential lot or retention area.

12. Reduce impervious impacts of residential driveways- by narrowing widths and moving access- to the rear of the site-.

13. Use shared driveways-.

14. Reduce width of residential streets-, depending on traffic and parking needs.

15. Reduce street- length, primarily in residential areas, by encouraging clustering and using curvilinear designs.

16. Reduce cul-de-sac- radii and use pervious vegetated islands in center to minimize impervious effects, and allow them to be utilized for truck maneuvering/loading to reduce need for wide loading ~~areas on~~areas on site .

17. Eliminate redundant non-ADA- sidewalks within a site (i.e., sidewalk to all entryways and/or to truck loading areas may be unnecessary for industrial developments).

18. Minimize car spaces and stall dimensions, reduce parking ratios and use shared parking facilities and structured parking.

19. Minimize the number of stream crossings and place crossing perpendicular to stream channel if possible.

20. Allow narrow street ~~right-of-ways~~rights-of-way through stream corridors whenever possible to reduce adverse impacts of transportation corridors.

*These development- practices represent the state of scientific knowledge at the time of this Code's enactment, if more effective habitat-friendly practices become available, they should be used.

Part (b): Design and Construction Practices to Minimize Impacts on Wildlife Corridors and Fish Passage

1. Carefully integrate fencing into the landscape to guide animals toward animal crossings under, over or around transportation corridors.

2. Use bridge crossings rather than culverts wherever possible.

3. If culverts are utilized, install slab, arch or box type culverts, preferably using bottomless designs that more closely mimic stream bottom habitat.

4. Design stream crossings for fish passage with shelves and other design features to facilitate terrestrial wildlife passage.

5. Extend vegetative cover through the wildlife crossing in the migratory route, along with sheltering areas.

Part (c): Miscellaneous Other Habitat-Friendly Design and Construction Practices

1. Use native plants throughout the development- (not just in NRA).

2. Locate landscaping (required by other sections of the Code) adjacent to NRA.

3. Reduce light-spill off into NRAs from development-.