

Memorandum

Date: November 12, 2021

To: West Linn Planning Commission

From: Chris Myers, Associate Planner

Subject: CDC Chapter 27 Amendments (FEMA Floodplain Regulations)

The City of West Linn floodplain regulations, [Community Development Code \(CDC\) Chapter 27](#), contain the code provisions that must be met to allow development within flood hazard zones. Periodically, the Federal Emergency Management Agency (FEMA) performs an audit of the West Linn Community Development Code to ensure we are meeting the minimum required FEMA standards. The Oregon Department of Land Conservation and Development (DLCD) performed the audit on behalf of FEMA.

The Planning Commission (PC) received a memo regarding the required code amendments at its October 20th meeting and held a work session on the required changes at its November 3rd meeting. Since the work session, staff has made two changes to the format of the proposed amendments and also received guidance from DLCD on two items discussed with the PC.

Format Changes:

1. Definitions were moved to CDC Chapter 2. Proposed amendments are attached.
2. Text within CDC Chapter 27 was rearranged to reflect the organization found in the Oregon Model Flood Hazard Code. This change was made for ease of use and to eliminate staff trying to find appropriate locations within the existing structure for various sections of the model code. The proposed amendments to CDC Chapter 27 are attached and meet the minimum FEMA standards.

As with other code amendments proposals, existing text to be removed is represented with ~~strikethrough text~~ and text to be added is represented with **bold underline**. Text not represented with a strikethrough or bold underline is text currently in our code that is not being replaced.

Guidance From DLCD:

1. The Exemptions section (27.030), which FEMA does not utilize, will remain in the CDC after staff consulted with DLCD.
2. The criteria in Chapter 27 to “*balance cut and fill*” will remain in the CDC as it is required by Metro Functional Plan Title 3.

The Legislative Public Hearing, which was tentatively scheduled for December 15th, has been delayed until January 19, 2022 to ensure staff has time to evaluate any potential cross-references in the CDC that need attention and ensure DLCD has adequate time to review the proposed amendments. This adjustment to the schedule will also allow the opportunity for additional work sessions with the Planning Commission if necessary.

If you have questions about the materials, please feel free to email or call me at 503-742-6062 or email at cm Myers@westlinnoregon.gov. As always, please submit questions before the meeting to increase the efficiency and effectiveness of the discussion as it allows staff to prepare materials and distribute them for your consideration.

Proposed Amendments to West Linn Community Development Code Chapter 2: Definitions

FLOODPLAIN DEFINITIONS (Specific to development in the floodplain)

Appeal: A request for a review of the interpretation of any provision of this ordinance or a request for a variance.

~~Area of shallow flooding. A designated AO or AH zone as seen on the Flood Insurance Rate Map (FIRM). The base flood depths range from one to three feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and velocity flow may be evident. AO is characterized as sheet flow and AH indicates ponding.~~

Area of shallow flooding: A designated Zone AO, AH, AR/AO or AR/AH (or VO) 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.

~~Area of special flood hazard. The land in the floodplain subject to a one percent or greater chance of flooding in any given year. Designation on maps always includes the letters A or V.~~

Area of Special Flood Hazard: The land in the floodplain within a community subject to a 1 percent 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. "Special flood hazard area" is synonymous in meaning and definition with the phrase "area of special flood hazard". [Also see city definition for "floodplain".]

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

Base flood: The flood having a one percent chance of being equaled or exceeded in any given year. [See definition in city code for "flood, base" which is correct.]

~~Base flood elevation. The base flood elevation is the elevation (normally in feet above sea level) which the base flood is expected to reach.~~

Base flood elevation (BFE): The elevation to which floodwater is anticipated to rise during the base flood.

Basement: Any area of the building having its floor subgrade (below ground level) on all sides.

Below-grade crawlspace. An enclosed area below the base flood elevation in which the interior grade is not more than two feet below the lower adjacent exterior grade. The height of the crawlspace, as measured from the interior grade of the crawlspace to the top of the crawlspace foundation, may not exceed four feet at any point.

Design flood elevation. The elevation of the 100-year storm as defined in FEMA Flood Insurance Studies or, in areas without FEMA floodplains, the elevation of the 25-year storm, or the edge of mapped floodprone soils or similar methodologies.

Development: Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

FEMA (Federal Emergency Management Agency). The agency which administers the National Flood Insurance Program.

Flood or Flooding:

(a) A general and temporary condition of 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 cyclical 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.

Flood elevation study: See "Flood Insurance Study".

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

Flood Insurance Rate Map (FIRM): 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).

[Flood Insurance Study. The official report provided by the Federal Insurance Administration that includes flood profiles, the Flood Boundary Floodway Map, and the water surface elevation of the base flood.](#)

Flood Insurance Study (FIS): 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.

Flood proofing: Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate risk of flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents.

Flood management areas. All lands contained in the Flood Management Area Overlay Zone, which include: lands within the 100-year floodplain, flood area, and floodway as shown on the FEMA flood insurance map dated June 17, 2008; the area of inundation for the February 1996 flood; and lands which have documented evidence of flooding.

~~Flood or flooding. A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters, and/or the unusual and rapid accumulation of runoff of surface waters from any source.~~

Flood, base. The flood having a one percent chance of being equaled or exceeded in any given year.

Floodplain. Land subject to periodic flooding, including the 100-year floodplain as mapped by FEMA Flood Insurance Studies or other substantial evidence of actual flood events.

~~Floodway. The portion of a watercourse required for the passage or conveyance of a given storm event as identified and designated by the City. The floodway includes the channel of the watercourse and the adjacent floodplain that must be reserved in an unobstructed condition in order to discharge the base flood.~~

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."

Floodway fringe. The area of the floodplain, lying outside the floodway, which does not contribute appreciably to the passage of floodwater, but serves as a retention area.

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

Highest adjacent grade: The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

Historic structure: Any structure that is:

- 1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;**
- 2. 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;**
- 3. Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of Interior; or**
- 4. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:**

- a. By an approved state program as determined by the Secretary of the Interior or
- b. Directly by the Secretary of the Interior in states without approved programs.

[Also see city's "Historic Definitions"]

~~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 Chapter 27-CDC.~~

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 ordinance.

Manufactured 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".

Manufactured dwelling park or subdivision: A parcel (or contiguous parcels) of land divided into two or more manufactured dwelling lots for rent or sale.

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.

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 by COMMUNITY NAME and includes any subsequent improvements to such structures.

Recreational vehicle: A vehicle which is:

1. Built on a single chassis;
2. 400 square feet or less when measured at the largest horizontal projection;
3. Designed to be self-propelled or permanently towable by a light duty truck; and
4. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

Special flood hazard area: See "Area of special flood hazard" for this definition.

Start of construction: 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 the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured 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 walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

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.

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.

Substantial improvement: 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. This term includes structures which have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either:

1. 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
2. Any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

Variance: A grant of relief by COMMUNITY NAME from the terms of a flood plain management regulation.

Violation: The failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this ordinance is presumed to be in violation until such time as that documentation is provided.

Chapter 27 FLOOD MANAGEMENT AREAS

Sections:

- 27.010 PURPOSE
- 27.020 APPLICABILITY
- 27.025 COMPLIANCE**
- 27.030 EXEMPTIONS
- 27.040 PROHIBITED USES
- 27.045 CRITICAL FACILITIES
- 27.050 ~~APPLICATION~~ **ABROGATION AND SEVERABILITY**
- 27.055 INTERPRETATION, WARNING, AND DISCLAIMER OF LIABILITY**
- 27.060 ~~APPROVAL CRITERIA~~ **ADMINISTRATION**
- ~~27.065 INTERPRETATION OF FLOOD BOUNDARIES~~
- 27.070 ~~CONSTRUCTION MATERIALS AND METHODS~~ **GENERAL STANDARDS**
- 27.080 ~~RESIDENTIAL CONSTRUCTION~~ **SPECIFIC STANDARDS FOR RIVERINE (INCLUDING ALL NON-COASTAL) FLOOD ZONES**
- 27.090 ~~NON-RESIDENTIAL CONSTRUCTION~~ **STANDARDS FOR FLOODWAYS**
- 27.100 SUBDIVISION PROPOSAL **STANDARDS FOR SHALLOW FLOODING AREAS**
- 27.110 ~~MANUFACTURED HOMES~~ **CONSISTENCY**
- ~~27.120 ALTERATION OF WATERCOURSES~~
- ~~27.130 VARIANCES~~
- ~~27.140 ABROGATION AND GREATER RESTRICTIONS~~
- ~~27.150 WARNING AND DISCLAIMER OF LIABILITY~~
- ~~27.160 MAP ADMINISTRATION~~
- ~~27.170 CONSISTENCY~~

27.010 PURPOSE

~~The purpose of this chapter is to create a Flood Management Area Overlay Zone in order to protect flood management areas that are identified on the flood management area map incorporated by reference as a part of this chapter. Flood management areas contain land identified by the Federal Insurance Administration in a scientific and engineering report entitled~~

~~“The Flood Insurance Study for Clackamas County, Oregon, and incorporated areas,” dated June 17, 2008, with accompanying Flood Insurance Maps; the area of inundation for the February-1996 flood based on data provided by Metro; and lands that have physical or documented evidence of flooding within recorded history. Flood management areas provide the following functions: protect life and property from dangers associated with flooding; flood storage, reduction of flood velocities, reduction of flood peak flows and reduction of wind and wave impacts; maintain water quality by reducing and sorting sediment loads, process chemical and organic wastes and reduce nutrients; recharge, store, and discharge groundwater; provide plant and animal habitat; and support riparian ecosystems. (Ord. 1522, 2005; Ord. 1565, 2008)~~

A. It is the purpose of this ordinance to promote public health, safety, and general welfare, and to minimize public and private losses due to flooding in 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. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;**
- 4. Minimize prolonged business interruptions;**
- 5. Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone and sewer lines; and streets and bridges located in special flood hazard areas;**
- 6. 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;**
- 7. Notify potential buyers that the property is in a special flood hazard area**
- 8. Notify those who occupy special flood hazard areas that they assume responsibility for their actions**
- 9. Participate in and maintain eligibility for flood insurance and disaster relief.**

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

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

27.020 APPLICABILITY

This ordinance shall apply to all special flood hazard areas within the jurisdiction of West Linn. A flood management area permit is required for all development in the Flood Management Area Overlay Zone. The standards that apply to flood management areas apply in addition to State or federal restrictions governing floodplains or flood hazard areas.

A. Basis for Establishing the Special Flood Hazard Areas

The special flood hazard areas identified by the Federal Insurance Administrator in a scientific and engineering report entitled "Flood Insurance Study: Clackamas County, Oregon and Incorporated Areas, dated 06/2008 and revised 01/2019. FIRM Panels 41005C0018D, 41005C0019D, 41005C0038D, 41005C0257D, 41005C0259D, 41005C0260D, and 41005C0276D are hereby adopted by reference and declared to be a part of this ordinance. The FIS and FIRM panels are on file at West Linn City Hall with the Community Development Department.

B. Coordination with State of Oregon Specialty Codes

Pursuant to the requirement established in ORS 455 that the City of West Linn administers and enforces the State of Oregon Specialty Codes, the City of West Linn does hereby acknowledge that the Oregon Specialty Codes contain certain provisions that apply to the design and construction of buildings and structures located in special flood hazard areas. Therefore, this ordinance is intended to be administered and enforced in conjunction with the Oregon Specialty Codes.

27.025 COMPLIANCE

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

A. Penalties for Noncompliance

No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violations of the provisions of this ordinance by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a Civil Violation with penalties not to exceed the maximum amount authorized in ORS 455.895. Nothing contained herein shall prevent the City of West Linn from taking such other lawful action as is necessary to prevent or remedy any violation.

27.030 EXEMPTIONS

This chapter does not apply to work necessary to protect, repair, or maintain existing public or private structures, utility facilities, roadways, driveways, accessory uses, and exterior improvements, or replace small public structures, utility facilities, or roadways in response to emergencies. Within 30 days after the work has been completed, the party responsible for the work shall initiate a flood management permit designed to analyze any changes effectuated during the emergency and mitigate adverse impacts. (Ord. 1522, 2005)

27.040 PROHIBITED USES

Prohibited uses in flood management areas include the following:

- A. Any use prohibited in the base zone.
- B. Uncontained areas of hazardous materials as defined by the Oregon Department of Environmental Quality.

27.045 CRITICAL FACILITIES

Construction of new critical facilities shall be, to the greatest extent possible, located outside the limits of the SFHA. Construction of new critical facilities shall only 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 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. Flood-proofing 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.

27.050 APPLICATION ABROGATION AND SEVERABILITY

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

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

~~Applications for a flood management area permit must include the following:~~

- ~~A. A pre-application conference as a prerequisite to the filing of the application.~~

- ~~B. — An application initiated by the property owner, or the owner’s authorized agent, and accompanied by the appropriate fee.~~
- ~~C. — An application submittal that includes the completed application form, one copy of written responses addressing CDC 27.060, 27.070, 27.080 (if applicable), and 27.090 (if applicable), one copy of all maps and plans at the original scale, one copy of all maps and plans reduced to a paper size not greater than 11 inches by 17 inches, and a copy in a digital format acceptable to the City.~~
- ~~D. — A map of the property indicating the nature of the proposed alteration and its relationship to property zones, structures, trees, and any other pertinent features.~~
- ~~E. — Information regarding the elevation of the site prior to development, the base flood elevation data for subdivisions (if applicable), and a description of water course alterations, if proposed.~~
- ~~F. — A topographic map of the site at contour intervals of five feet or less showing a delineation of the flood management area, which includes, but is not limited to, areas shown on the Flood Management Area map. The City Engineer or Building Official, as applicable, may, at their discretion, require the map to be prepared by a registered land surveyor to ensure accuracy. A written narrative explaining the reason why the owner wishes to alter the floodplain shall accompany the site plan map.~~
- ~~G. — The elevation in relation to mean sea level, of the lowest floor (including basement) of all structures.~~
- ~~H. — The elevation in relation to mean sea level to which any structure has been flood proofed (non residential only). (Ord. 1622 § 10, 2014; Ord. 1636 § 24, 2014)~~

27.055 INTERPRETATION, WARNING, AND DISCLAIMER OF LIABILITY

- A. In the interpretation and application of this ordinance, 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.**
- B. The degree of flood protection required by this ordinance 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 ordinance does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages.**
- C. This ordinance shall not create liability on the part of the City of West Linn, any officer or employee thereof, or the Federal Insurance Administrator for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.**

27.060 APPROVAL CRITERIA ADMINISTRATION

A. The Planning Manager is hereby appointed to administer, implement, and enforce this ordinance by granting or denying development permits in accordance with its provisions. The Floodplain Administrator may delegate authority to implement these provisions.

B. Duties of the floodplain administrator, or their designee, shall include, but not be limited to:

1. Review all development permits to determine that:

- a. The permit requirements of this ordinance have been satisfied;**
- b. All other required local, state, and federal permits have been obtained and approved.**
- c. Review all development permits to determine if the proposed development is located in a floodway. If located in the floodway assure that the floodway provisions of this ordinance in CDC 27.090 are met; and**
- d. Review all development permits to 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 CDC 27.070.G; and**
- e. Provide to building officials the Base Flood Elevation (BFE) applicable to any building requiring a development permit.**
- f. Review all development permit applications to determine if the proposed development qualifies as a substantial improvement as defined in CDC Chapter 2.**
- g. Review all development permits to determine if the proposed development activity is a watercourse alteration. If a watercourse alteration is proposed, ensure compliance with the provisions in section CDC 27.070.A.**
- h. Review all development permits to determine if the proposed development activity includes the placement of fill or excavation.**

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

- a. Obtain, record, and maintain 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 CDC 27.070.G.**
- b. Obtain and record 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 CDC 27.090 and CDC 27.060.B.1.b are adhered to.**

- c. Upon placement of the lowest floor of a structure (including basement) but prior to further vertical construction, obtain 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, obtain 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 the final inspection.
 - e. Maintain all Elevation Certificates (EC) submitted to the community;
 - f. Obtain, record, and maintain 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 ordinance and where Base Flood Elevation (BFE) data is provided through the FIS, FIRM, or obtained in accordance with CDC 27,070.G.
 - g. Maintain all floodproofing certificates required under this ordinance;
 - h. Record and maintain all variance actions, including justification for their issuance;
 - i. Obtain and maintain all hydrologic and hydraulic analyses performed as required under CDC 27.090.
 - j. Record and maintain all Substantial Improvement and Substantial Damage calculations and determinations as required under CDC 27.060.B.4.
 - k. Maintain for public inspection all records pertaining to the provisions of this ordinance.
3. Requirement to notify other entities and submit new technical data.
- a. Community Boundary Alterations. The Floodplain Administrator shall notify the Federal Insurance Administrator in writing whenever the boundaries of the community have been modified by annexation or the community 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 community's boundaries. Include within such notification a copy of a map of the community suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority.
 - b. Watercourse Alterations. 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. This notification shall be provided by the applicant to the Federal Insurance Administration as a Letter of Map Revision (LOMR) along with either:
 - i. A proposed maintenance plan to assure the flood carrying capacity within the altered or relocated portion of the watercourse is maintained; or

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

The applicant shall be required to submit a Conditional Letter of Map Revision (CLOMR) when required under CDC 27.060.B.3.c. Ensure compliance with all applicable requirements in CDC 27.060.B.3.c and CDC 27.070.A.

- c. Requirement to submit new technical data. A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not 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 community 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.

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

- i. Proposed floodway encroachments that increase the base flood elevation; and
- ii. Proposed development which increases the base flood elevation by more than one foot in areas where FEMA has provided base flood elevations but no floodway.

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).

4. Substantial Improvement and Substantial Damage Assessments and Determinations. Conduct Substantial Improvement (SI) (as defined in CDC Chapter 2) reviews for all structural development proposal applications and maintain a record of SI calculations within permit files in accordance with CDC 27.060.B.2. Conduct Substantial Damage (SD) (as defined in CDC Chapter 2) assessments when structures are damaged due to a natural hazard event or other causes. Make SD determinations whenever structures within the special flood hazard area (as established in CDC 27.020.A) 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.

C. Establishment of Development Permit.

1. A development permit shall be obtained before construction or development begins within any area horizontally within the special flood hazard area established in CDC 27.020.A. The development permit shall be required for all structures, including

manufactured dwellings, and for all other development, as defined in CDC Chapter 2, including fill and other development activities.

2. Application for a development permit may be made on forms furnished by the 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:

- a. In riverine flood zones, the proposed elevation (in relation to mean sea level), of the lowest floor (including basement) and all attendant utilities of all new and substantially improved structures; in accordance with the requirements of CDC 27.060.B.2.
- b. Proposed elevation in relation to mean sea level to which any non-residential structure will be floodproofed.
- c. Certification by a registered professional engineer or architect licensed in the State of Oregon that the floodproofing methods proposed for any non-residential structure meet the floodproofing criteria for non-residential structures in CDC 27.080.C.3.
- d. Description of the extent to which any watercourse will be altered or relocated.
- e. Base Flood Elevation data for subdivision proposals or other development when required per CDC 27.060.B and CDC 27.070.F.
- 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.

D. Variance Procedure.

The issuance of a variance 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 CDC 27.060.D.1.c and CDC 27.060.D.1.e and CDC 27.060.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. Variations shall only be issued upon:

- i. A showing of good and sufficient cause;**
- ii. A determination that failure to grant the variance would result in exceptional hardship to the applicant;**
- iii. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing laws or ordinances.**

- e. Variations may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that the criteria of CDC 27.060.D.1(b-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.**

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 CDC 27.060.B.2.

The Planning Director shall make written findings with respect to the following criteria when approving, approving with conditions, or denying an application for development in flood management areas:

A. — Development, excavation, and fill shall be performed in a manner to maintain or increase flood storage and conveyance capacity and not increase design flood elevations.

B. — No net fill increase in any floodplain is allowed. All fill placed in a floodplain shall be balanced with an equal amount of soil material removal. Excavation areas shall not exceed fill areas by more than 50 percent of the square footage. Any excavation below the ordinary high-water line shall not count toward compensating for fill.

C. — Excavation to balance a fill shall be located on the same lot or parcel as the fill unless it is not reasonable or practicable to do so. In such cases, the excavation shall be located in the same drainage basin and as close as possible to the fill site, so long as the proposed excavation and fill will not increase flood impacts for surrounding properties as determined through hydrologic and hydraulic analysis.

D. — Minimum finished floor elevations must be at least one foot above the design flood height or highest flood of record, whichever is higher, for new habitable structures in the flood area.

E. — Temporary fills permitted during construction shall be removed.

~~F. — Prohibit encroachments, including fill, new construction, substantial improvements, and other development in floodways unless certification by a professional civil engineer licensed to practice in the State of Oregon is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.~~

~~G. — All proposed improvements to the floodplain or floodway which might impact the flood carrying capacity of the river shall be designed by a professional civil engineer licensed to practice in the State of Oregon.~~

~~H. — New culverts, stream crossings, and transportation projects shall be designed as balanced cut and fill projects or designed not to significantly raise the design flood elevation. Such projects shall be designed to minimize the area of fill in flood management areas and to minimize erosive velocities. Stream crossings shall be as close to perpendicular to the stream as practicable. Bridges shall be used instead of culverts wherever practicable.~~

~~I. — Excavation and fill required for the construction of detention facilities or structures, and other facilities, such as levees, specifically shall be designed to reduce or mitigate flood impacts and improve water quality. Levees shall not be used to create vacant buildable land.~~

~~J. — The applicant shall provide evidence that all necessary permits have been obtained from those federal, State, or local governmental agencies from which prior approval is required. (Ord. 1522, 2005; Ord. 1635 § 15, 2014; Ord. 1636 § 25, 2014)~~

~~27.065 INTERPRETATION OF FLOOD BOUNDARIES~~

~~The Planning Director shall make interpretations, where needed, as to exact location of the boundaries of the flood hazard area (for example, where there appears to be a conflict between mapped boundaries and the actual filed condition). Any person contesting the location of the boundary may appeal the Planning Director's interpretation pursuant to CDC 01.060. (Ord. 1522, 2005)~~

27.070 CONSTRUCTION MATERIALS AND METHODS GENERAL STANDARDS

In all special flood hazard areas, the following standards shall be adhered to:

A. Alteration of Watercourses.

- 1. 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 CDC 27.060.B.3.b and CDC 27.060.B.3.c.**

B. Anchoring.

1. 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.
2. All manufactured dwellings shall be anchored per CDC 27.080.C.4.

C. Construction Materials and Methods

1. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

D. Utilities and Equipment

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

- a. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.
- b. 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.
- c. 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.

2. Electrical, Mechanical, Plumbing, and Other Equipment

- a. Electrical, heating, ventilating, air-conditioning, plumbing, duct systems, and other equipment and service facilities shall be elevated at or above one foot above the base flood level 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. In addition, electrical, heating, ventilating, air-conditioning, plumbing, duct systems, and other equipment and service facilities, if replaced as part of a substantial improvement, shall meet all the requirements of this section.

E. Tanks.

1. Underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood.
2. Above-ground tanks shall be installed at or above one foot above the base flood level or shall be anchored to prevent flotation, collapse, and lateral movement under conditions of the base flood.

F. Subdivision Proposals and Other Proposed Developments

1. **All new subdivision proposals and other proposed new 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.**
2. **Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for any land division proposal.**
3. **All new subdivision proposals and other proposed new developments (including proposals for manufactured dwelling parks and subdivisions) shall:**
 - a. **Be consistent with the need to minimize flood damage.**
 - b. **Have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.**
 - c. **Have adequate drainage provided to reduce exposure to flood hazards.**

G. Use of Other Base Flood Elevation Data

1. **When Base Flood Elevation data has not been provided in accordance with CDC 27.020.A 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 CDC 27.070, CDC.27.080, CDC.27.090, and CDC 27.100. All new subdivision proposals and other proposed new developments (including proposals for manufactured dwelling parks and subdivisions) must meet the requirements of CDC 27.070.F.**
2. **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 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. When no base flood elevation data is available, the elevation requirement for development proposals within a riverine unnumbered A Zone is a minimum of two (2) feet above the highest adjacent grade, to be reasonably safe from flooding. Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.**

H. Structures Located in Multiple or Partial Flood Zones

In coordination with the State of Oregon Specialty Codes:

1. **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 zone shall apply.**

2. 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.

I. Balanced Cut and Fill

- 1. Development, excavation, and fill shall be performed in a manner to maintain or increase flood storage and conveyance capacity and not increase design flood elevations.**
- 2. No net fill increase in any floodplain is allowed. All fill placed in a floodplain shall be balanced with an equal amount of soil material removal. Excavation areas shall not exceed fill areas by more than 50 percent of the square footage. Any excavation below the ordinary high water line shall not count toward compensating for fill.**
- 3. Excavation to balance a fill shall be located on the same lot or parcel as the fill unless it is not reasonable or practicable to do so. In such cases, the excavation shall be located in the same drainage basin and as close as possible to the fill site, so long as the proposed excavation and fill will not increase flood impacts for surrounding properties as determined through hydrologic and hydraulic analysis.**

~~A. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage using methods and practices that minimize flood damage.~~

~~B. 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.~~

~~C. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.~~

~~D. 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.~~

~~E. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.~~

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

27.080 RESIDENTIAL CONSTRUCTION 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 in section 27.070 of this ordinance.

A. Flood Openings

- 1. All new construction and substantial improvements with fully enclosed areas below the lowest floor (excluding basements) are subject to the following requirements.**
- 2. 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 the entry and exist 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 area of non-engineered openings shall be not less than one (1) 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.**
 - v. All additional higher standards for flood openings in the State of Oregon Residential Specialty Codes Section R322.2.2 shall be complied with when applicable.**

B. Garages

- 1. Attached garages may be constructed with the garage floor slab below the Base Flood Elevation (BFE) in riverine flood zones, if the following requirements are met:**
 - a. If located within a floodway the proposed garage must comply with the requirements of CDC 27.090.**
 - b. The floors are at or above grade on not less than one side;**
 - c. The garage is used solely for parking, building access, and/or storage;**
 - d. The garage is constructed with flood openings in compliance with CDC 27.080.A. to equalize hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwater.**
 - e. The portions of the garage constructed below the BFE are constructed with materials resistant to flood damage;**
 - f. The garage is constructed in compliance with the standards in CDC 27.070; and**

- g. 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.**

- 2. Detached garages must be constructed in compliance with the standards for appurtenant structures in CDC 27.080.C.6 or non-residential structures in CDC 27.080.C.3 depending on the square footage of the garage.**

C. For Riverine (Non-Coastal) Special Flood Hazard Areas with Base Flood Elevations

In addition to the general standards listed in CDC 27.070 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.

1. Before Regulatory Floodway

In areas where a regulatory floodway has not been designated, no new construction, substantial improvement, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's Flood Insurance Rate Map (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.

2. Residential Construction

- a. New construction, conversion to, and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated at or above one foot above the Base Flood Elevation.**
- b. Enclosed areas below the lowest floor shall comply with the flood opening requirements in CDC 27.080.A.**

3. Non-Residential Construction.

- a. New construction, conversion to, and substantial improvement of any commercial, industrial, or other non-residential structure shall:**
 - i. Have the lowest floor, including basement elevated at or above one foot above the Base Flood Elevation (BFE) or, together with 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.**
- (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 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 CDC 27.060.B.2.**

b. Non-residential structures that are elevated, not floodproofed, shall comply with the standards for enclosed areas below the lowest floor in CDC 27.080.A.

c. Applicants floodproofing non-residential buildings shall be notified that flood insurance premiums will be based on rates that are one (1) foot below the floodproofed level (e.g. a building floodproofed to the base flood level will be rated as one (1) foot below.

4. Manufactured Dwellings

- a. Manufactured dwellings to be placed (new or replacement) or substantially improved that are supported on solid foundation walls shall be constructed with flood openings that comply with CDC 27.080.A.**
- b. The bottom of the longitudinal chassis frame beam shall be at or above Base Flood Elevation.**
- c. 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 (Reference FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques).**
- d. Electrical crossover connections shall be a minimum of twelve (12) inches above Base Flood Elevation (BFE).**

5. 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 CDC 27.080.C.4, including the anchoring and elevation requirements for manufactured dwellings.**

6. Appurtenant (Accessory) Structures

Relief from elevation or 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:

- a. **Appurtenant structures located partially or entirely within the floodway must comply with requirements for development within a floodway found in CDC 27.090.**
- b. **Appurtenant structures must only be used for parking, access, and/or storage and shall not be used for human habitation.**
- c. **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 (2) 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 in size to 120 square feet.**
- d. **The portions of the appurtenant structure located below the Base Flood Elevation must be built using flood resistant materials.**
- e. **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.**
- f. **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 section CDC 27.080.A.**
- g. **Appurtenant structures shall be located and constructed to have low damage potential.**
- h. **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 in a tank installed in compliance with CDC 27.070.E.**
- i. **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.**

~~A. — New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to at least 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 certified by either a professional civil engineer or an architect licensed to practice in the State of Oregon, and must meet or exceed the following minimum criteria:~~

- ~~1. 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.~~
- ~~2. The bottom of all openings shall be no higher than one foot above grade.~~
- ~~3. Openings may be equipped with screens, louvers, or other coverings or devices; provided, that they permit the automatic entry or exit of floodwaters.~~
- ~~4. Fully enclosed areas below the base flood elevation shall only be used for parking, access, and limited storage.~~
- ~~5. Service equipment (e.g., furnaces, water heaters, washer/dryers, etc.) is not permitted below the base flood elevation.~~
- ~~6. All walls, floors, and ceiling materials located below the base flood elevation must be unfinished and constructed of materials resistant to flood damage.~~

~~C. Crawlspaces. Crawlspaces are a commonly used method of elevating buildings in special flood hazard areas (SFHAs) to or above the base flood elevation (BFE), and are allowed subject to the following requirements:~~

- ~~1. The building is subject to the Flood-Resistant Construction provisions of the Oregon Residential Specialty Code.~~
- ~~2. They shall be designed by a professional engineer or architect licensed to practice in the State of Oregon to meet the standards contained in the most current Federal Emergency Management Agency's (FEMA) Technical Bulletin.~~
- ~~3. 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.~~
- ~~4. Flood vent openings shall be provided on at least two sides that equalize hydrostatic pressures by allowing for the automatic entry and exit of floodwaters. The total area of the flood vent openings must be no less than one square inch for each square foot of enclosed area. The bottom of each flood vent opening can be no more than one foot above the lowest adjacent exterior grade. For guidance on flood openings, see FEMA Technical Bulletin 1-93, Openings in Foundation Walls.~~
- ~~5. Portions of the building below the BFE must be constructed with materials resistant to flood damage. This includes not only the foundation walls (studs and sheathing), but also any joists, insulation, or other materials that extend below the BFE. For more detailed guidance on flood-resistant materials see FEMA Technical Bulletin 2-93, Flood-Resistant Materials Requirements.~~

~~6. 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. For further guidance on the placement of building utility systems in crawlspaces, see FEMA 348, Protecting Building Utilities From Flood Damage. Flood resistant materials and utilities, access, and ventilation openings in crawlspaces are further addressed in this bulletin.~~

~~7. The interior grade of a crawlspace below the BFE must not be more than two feet below the lowest adjacent exterior grade (LAG).~~

~~8. 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. This limitation will also prevent these crawlspaces from being converted into habitable spaces.~~

~~9. There must be an adequate drainage system that removes floodwaters from the interior area of the crawlspace. Possible options include natural drainage through porous, well-drained soils and drainage systems such as low-point drains, perforated pipes, drainage tiles, or gravel or crushed stone drainage by gravity.~~

~~10. 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.~~

~~11. For more detailed information refer to FEMA Technical Bulletin 11-01 or the most current edition.~~

~~12. The use of below-grade crawlspaces to elevate the building to one foot above the BFE may cause an increase in flood insurance premiums, which are beyond the control of the City.~~

~~D. A poured slab placed over fill can be used to elevate the lowest floor of a structure above the base flood elevation. However, when a building site is filled, it is still in the floodplain and no basements are permitted.~~

~~E. Placing a structure on piers, piles, and posts is allowed provided supporting members are designed to resist hydrostatic and hydrodynamic forces. (Ord. 1565, 2008)~~

27.090 ~~NON-RESIDENTIAL CONSTRUCTION~~ STANDARDS FOR FLOODWAYS

Located within the special flood hazard areas established in CDC 27.020.A are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of the floodwaters which carry debris, potential projectiles, and erosion potential, the following provisions apply:

A. Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless:

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

Or,

2. A community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that a Conditional Letter of Map Revision (CLOMR) is applied for and approved by the Federal Insurance Administrator, and the requirements for such revision as established under Volume 44 of the Code of Federal Regulations, section 65.12 are fulfilled.

B. If the requirements of CDC 27.090.A are satisfied, all new construction, substantial improvements, and other development shall comply with all other applicable flood hazard reduction provisions of CDC 27.070, CDC 27.080, CDC 27.090, and CDC 27.100.

~~New construction and substantial improvement of any commercial, industrial, or other non-residential structure shall either have the lowest floor, including basement, elevated to at least one foot above the level of the base flood elevation; or, together with attendant utility and sanitary facilities, shall:~~

~~A. Be flood-proofed so that below the base flood level the structure is watertight with walls 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 professional civil engineer licensed to practice in the State of Oregon that the design and methods of construction shall prevent seepage, collapse or cracking of basement walls, prevent buckling of basement floors, prevent backup of water from sewer lines, and have all openings located one foot above the base flood elevation. In addition, all protective features must operate automatically without human intervention;~~

~~D. Non-residential construction that is elevated, but not flood-proofed (i.e., the foundation is not at least one foot above the 100-year flood elevation) shall also comply with the standards set forth in CDC 27.080. (Ord. 1522, 2005)~~

27.100 SUBDIVISION PROPOSAL 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 (1) to three (3) 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 sections CDC 27.070, CDC 27.080, CDC 27.090, and CDC 27.100.

B. Standards for AO Zones

In AO zones, the following provisions apply in addition to the requirements in CDC 27.070 and CDC 27.100.

1. New construction, conversion to, and substantial improvement of residential structures and manufactured dwellings within AO zones shall have the lowest floor, including basement, elevated above the highest grade adjacent to the building, at minimum to or above the depth number specified on the Flood Insurance Rate Maps (FIRM) or at least two (2) 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 minimum to or above the depth number specified on the Flood Insurance Rate Maps (FIRMS) or at least two (2) feet if no depth number is specified; or
 - 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 (2) 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 the effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect as stated in CDC 27.080.C.3.a.i.(c).
3. Recreational vehicles placed on sites within AO Zones on the community's Flood Insurance Rate Maps (FIRM) shall either:
 - 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 elevation requirements of section CDC 27.100.B.1, and the anchoring and other requirements for manufactured dwellings of section CDC 27.080.C.4.

4. In AO zones, new and substantially improved appurtenant structures must comply with the standards in CDC 27.080.C.6.

5. In AO zones, enclosed areas beneath elevated structures shall comply with the requirements in CDC 27.080.A.

~~A. All subdivision proposals shall be designed to minimize flood damage and not increase flood levels;~~

~~B. Lowest floor of all structures must be at least one foot above the base flood elevation;~~

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

~~D. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage and streets should drain rapidly; and~~

~~E. Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for any land division proposal. (Ord. 1522, 2005)~~

27.110 MANUFACTURED HOMES

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

~~B. All manufactured homes placed or substantially improved within zones A1-30, AH, and AE shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is at least one foot above the base flood elevation and is securely anchored to an adequately anchored foundation system.~~

~~C. Recreational vehicles shall be on site for less than 180 consecutive days, or be fully licensed and ready for highway use, or be elevated to at least one foot above the base flood elevation and meet manufactured home standards. (Ord. 1522, 2005)~~

27.120 ALTERATION OF WATERCOURSES

~~A. The applicant shall meet the requirements of Chapter 28 CDC, Willamette and Tualatin River Protection, or Chapter 32 CDC, Water Resource Area Protection, as applicable, in addition to this chapter's requirements.~~

~~B. A comparison by a professional civil engineer licensed to practice in the State of Oregon shall be made between the existing channel capacity and the proposed capacity and the changes assessed. The alteration or modification must maintain the carrying capacity of the watercourse and not increase the base flood elevation.~~

~~C. — The Planning Director shall notify adjacent communities and the State of Oregon Department of Land Conservation and Development prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration.~~

~~D. — The Planning Director shall require that maintenance be provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.~~

~~E. — The Planning Director shall require that alterations of watercourses must allow fish passage and preserve fish habitat.~~

~~F. — The applicant shall submit a copy of a permit from the Oregon Division of State Lands and U.S. Army Corps of Engineers that allows the alteration, or states that it is exempt.~~

27.130 VARIANCES

~~This section applies in addition to the standards governing variance proposals found in Chapter 75 CDC. The purpose of this section is to ensure that compliance with this chapter does not cause unreasonable hardship. To avoid such instances, the requirements of this chapter may be varied. Variances are also allowed when strict application of this chapter would deprive an owner of all economically viable use of land. The Planning Director may impose such conditions as are deemed necessary to limit any adverse impacts that may result from granting relief. Flood hazard applications that are submitted on or before the effective date of this chapter, and deemed complete within 180 days of submittal, are exempt from the requirements of this chapter. To vary from the requirements of this chapter, the applicant must demonstrate the following:~~

~~A. — The variance does not increase danger to life and property due to flooding or erosion;~~

~~B. — The impact of the increase in flood hazard, which will result from the variance, will not prevent the City from meeting the requirements of this chapter. The applicant shall have a professional civil engineer licensed to practice in the State of Oregon document the expected height, velocity, and duration of flood waters, and estimate the rate of increase in sediment transport of the flood waters expected both downstream and upstream as a result of the variance;~~

~~C. — The variance will not increase the cost of providing and maintaining public services during and after flood conditions so as to unduly burden public agencies and taxpayers;~~

~~D. — The proposed use complies with the standards of the base zone;~~

~~E. — The proposed use shall not result in any increase of flood levels during the base flood ordinary high water mark discharge within a designated floodway;~~

~~F. — If the variance allows a structure to be built with a lowest floor elevation below the base flood elevation, the applicant has been given written notice that the cost of flood insurance will be commensurate with the increased risk from the reduced lowest floor elevation. (Ord. 1522, 2005)~~

~~27.140~~ ABROGATION AND GREATER RESTRICTIONS

~~This chapter must be complied with in addition to any other applicable code provision, ordinance, statute, easement, covenant, or deed restriction. It is not intended to repeal any existing restriction. If any provision of this chapter and any other code provision, ordinance, easement, covenant, or deed restriction conflict or overlay, the provision containing the more stringent restriction shall prevail. All development within the Willamette River Greenway must comply with Chapter 28 CDC and all development within the Tualatin River Protection zone must comply with Chapter 28 CDC.~~

~~27.150~~ WARNING AND DISCLAIMER OF LIABILITY

~~The degree of flood protection required by this chapter 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 human-made or natural causes. This chapter 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 chapter shall not create liability on the part of the City of West Linn, any officer or employee thereof, or the Federal Insurance Administration for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.~~

~~27.160~~ MAP ADMINISTRATION

~~The purpose of this section is to provide a process for amending the flood management area map.~~

~~A. Within 90 days of receiving information establishing a possible error in the existence or location of a flood management area, the Planning Director shall provide notice to interested parties of a public hearing at which the City Council will review the information as set forth in CDC 99.060(C).~~

~~B. The City Council shall amend the flood management area map if the information demonstrates that the boundaries of the flood management area have changed since adoption of the flood management area map.~~

~~C. Amendments to the flood management area map that would result in a reduction to the 100-year floodplain shown on the flood insurance area map shall not take effect until successful completion of the National Flood Insurance Program map amendment or map revision process. (Ord. 1522, 2005)~~

~~27.170~~ 27.110 CONSISTENCY

Where the provisions of this chapter are less restrictive or conflict with comparable provisions of the zoning ordinance, regional, State, or federal law, the provisions that are more restrictive

shall govern. Where this chapter imposes restrictions that are more stringent than regional, State and federal law, the provisions of this chapter shall govern.