

Chapter 17.42 - FLOOD MANAGEMENT OVERLAY DISTRICT<sup>[20]</sup>

Footnotes:

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**Editor's note**— Ord. No. 08-1014, adopted July 1, 2009, repealed Chapter 17.42 in its entirety and enacted new provisions to read as herein set out. Prior to amendment, Chapter 17.42 pertained to similar subject matter. See Ordinance Disposition List for derivation.

17.42.010 - Purpose—Findings.

- A. There is established in the city a flood management overlay district. The flood management overlay district is an overlay zone classification defining areas subject to periodic flooding or inundation which can result in property harm or loss, disruption of public services, hazards for public health, or added expense for public services. All conditions and restrictions of land use established by this chapter of the city's zoning ordinance shall be in addition to such restrictions and conditions as may be imposed and established in underlying zoning districts.
- B. It is the purpose of this chapter to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:
  1. To protect human life and health;  
To minimize expenditure of public money and costly flood control projects;  
To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
  2. To minimize prolonged business interruptions;
  3. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
  4. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
  5. To ensure that potential buyers are notified that property is in an area of special flood hazard;
  6. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions; and
  7. To protect flood management areas, which provide the following functions:
    - a. Protect life and property from dangers associated with flooding;
    - b. Flood storage, reduction of flood velocities, reduction of flood peak;
    - c. Flows and reduction of wind and wave impacts;
    - d. Maintain water quality by reducing and sorting sediment loads;
    - e. Processing chemical and organic wastes and reducing nutrients, recharge, store and discharge groundwater; and
    - f. Provide plant and animal habitat, and support riparian ecosystems.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.020 - Applicability.

- A. This chapter shall apply to development in the flood management overlay district, which may also be referred to as the "floodplain overlay district" in this code. The flood management overlay district includes all areas of special flood hazards and all flood management areas within the city. The overlay district restricts the uses that are allowed in the base zone by right, with limitations, or as provisional uses.
- B. The flood management areas which have been mapped include the following locations:
  - 1. Land contained within the one hundred-year floodplain, flood area and floodway as shown on the Federal Emergency Management Agency flood insurance maps dated June 17, 2008, including areas of special flood hazard pursuant to Section 17.42.040 and the area of inundation for the February 1996 flood; and
  - 2. Lands that have physical or documented evidence of flooding within recorded history based on aerial photographs of the 1996 flooding and/or the water quality and flood management areas maps.
- C. The standards that apply to the flood management areas apply in addition to state or federal restrictions governing floodplains or flood management areas.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.030 - Basis for establishing the areas of special flood hazard.

The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Clackamas County, Oregon and Incorporated Areas," dated June 17, 2008, with accompanying flood insurance maps is adopted by reference and declared to be a part of this chapter. The flood insurance study is on file at the office of the city recorder in the City Hall.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.040 - Compliance.

No structure or land shall hereafter be constructed, located, extended, converted or altered without full compliance with the terms of these floodplain regulations and other applicable regulations. Violations of the provisions of this chapter by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a civil infraction. Any person who violates this chapter or fails to comply with any of its requirements shall be subject to the enforcement procedures of this code per OCMC 1.20 Civil Infractions and 1.24 Code Enforcement. Nothing herein contained shall prevent the city from taking such other lawful action as is necessary to prevent or remedy.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.050 - Abrogation and interpretation.

This chapter is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. All provisions shall be considered as minimum requirements and liberally construed in favor of the governing body. Where this chapter and another section, easement, covenant or deed restriction conflict or overlap, whichever imposes the more stringent restriction shall prevail.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.060 - 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 man-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 flooding damages. This chapter shall not create liability on the part of the city, 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 thereunder.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.070 - Severability.

The provisions of this chapter are severable. If any section, clause or phrase of this chapter is adjudged to be invalid by a court of competent jurisdiction, the decision of that court shall not affect the validity of the remaining portions of this chapter.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.080 - Administration.

This chapter establishes a flood management overlay district, which is delineated on the water quality and flood management areas map attached and incorporated by reference as a part of this document.

- A. The following maps and studies are adopted and declared to be a part of this chapter. These maps are on file in the office of the city recorder:
  1. The Water Quality and Flood Management Areas Map, dated June 7, 1999;
  2. The Federal Insurance Administration, Flood Insurance Rate Maps for Clackamas County, Oregon and Incorporated Areas dated June 17, 2008;
- B. Applicants are required to provide the city with a delineation of the flood management areas on the subject property as part of any application. An application shall not be complete until this delineation is submitted to the city.
- C. The city shall review the water quality and flood management areas maps during periodic review as required by ORS 197.633 (1997).
- D. Development Permit.
  1. A development permit shall be obtained before construction or development begins within any portion of the flood management overlay district. The permit shall be for all structures, including manufactured homes and all other development, including fill and other activities, as set forth in Chapter 17.04 (Definitions).
  2. Application for a development permit shall be made on forms furnished by the community development department. Requirements may include, but are not 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 materials, drainage facilities; and the location of the foregoing.
  3. The following information is specifically required:
    - a. Elevation in relation to mean sea level of the lowest floor (including basement) of all structures;

- b. Elevation in relation to mean sea level to which any structure has been floodproofed;
- c. Certification by a registered professional engineer or architect that the floodproofing methods for any nonresidential structure meet the floodproofing criteria in Section 17.42.170E.5.; and
- d. Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.090 - Building official—Duties and responsibilities.

- A. The city building official, defined as the local floodplain administrator, is appointed to administer and implement this chapter by granting or denying development permit applications in accordance with its provisions.
- B. Duties of the building official shall include, but not be limited to those listed in this chapter.
- C. The building official shall:
  - 1. Review all development permits to determine that the permit requirements of this title have been satisfied;
  - 2. Review all development permits to determine that all necessary permits have been obtained from those federal, state or local governmental agencies from which prior approval is required; and
  - 3. Review all development permits to determine if the proposed development is located in the floodway. If located in the floodway, assure that the encroachment provisions of Section 17.42.200 are met.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.100 - Use of other base flood data.

When base flood elevation data has not been provided in accordance with Section 17.42.030, the building official shall obtain, review and reasonably utilize any base flood elevation and floodway data available from a federal, state or other source, in order to administer Sections 17.42.160 and 17.42.200.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.110 - Information to be obtained and maintained.

The building official shall:

- A. Where base flood elevation data is provided through the flood insurance study, FIRM or required as in Section 17.42.100, obtain and record the actual elevation (in relation to mean sea level) of the lowest floor (including basement) of all new or substantially improved structures, and whether or not the structure contains a basement.
- B. For all new or substantially improved floodproofed structures where base flood elevation data is provided through the flood insurance study, FIRM, or as required in Section 17.42.080:
  - 1. Verify and record the actual elevation (in relation to mean sea level); and
  - 2. Maintain the floodproofing certifications required in Section 17.42.080C.3.;
  - 3. Maintain for public inspection all records pertinent to the provisions of this chapter.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.120 - Alteration of watercourses.

- A. Notify adjacent communities and the 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.
- B. Require that maintenance is provided within the altered or relocated portion of the watercourse so that the flood-carrying capacity is not diminished.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.130 - Map administration.

- A. The purpose of this section is to provide a process for interpreting and amending the water quality and flood management areas map to clarify and correct the location of flood management overlay district.
- B. Interpretation of Map Boundaries. The building official 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 Section 17.42.150.
- C. Map corrections shall be processed pursuant to the requirements of Chapter 17.68:
  - 1. Within ninety days of receiving information establishing a possible error in the existence or location of the flood management overlay district, the city shall provide notice to interested parties of a public hearing at which the city will review the information.
  - 2. The city shall amend the water quality and flood management areas map if the information demonstrates that the boundaries of the flood management overlay district have changed since adoption of the water quality and flood management areas map by Metro (June 18, 1998) provided that, in the case of a boundary established by FEMA, a letter of map amendment (LOMA) or letter of map revision is obtained from FEMA by the applicant prior to any map change.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

17.42.140 - Appeals and variance procedure.

- A. 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.
- B. This section applies to requests to vary from the standards of this chapter only. Requests to vary from other standards of this title shall be subject to the requirements of Chapter 17.60.
  - 1. Variance applications made pursuant to this section shall follow the variance procedures outlined in Chapter 17.50.
  - 2. In addition to the public notice requirements outlined in Section 17.50.090, Metro shall be notified within fourteen days of the city receiving an application to vary the requirements of this section and within fourteen days of a decision on the variance.

3. The requirements of Section 17.60.020 (Variances—Grounds) do not apply to requests to vary from the standards of Chapter 17.42.
  4. If an application to vary from the standards of Chapter 17.42 is made in conjunction with an application to vary from other standards of this chapter, the variances may be processed as one application, provided the standards applicable to each variance requested must be met before the requested variance may be granted.
- C. Hardship Variance. Variances to avoid unreasonable hardship caused by the strict application of this chapter are permitted subject to the criteria set forth in this section. To vary from the requirements of this chapter, the applicant must demonstrate the following:
1. The variance is the minimum necessary to allow the proposed use or activity;
  2. The variance will not increase danger to life and property due to flooding or erosion;
  3. 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. In support of this criteria the applicant shall have a qualified professional engineer document the expected height, velocity and duration of floodwaters, and estimate the rate of increase in sediment transport of the floodwaters expected both downstream and upstream as a result of the variance;
  4. 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; and
  5. The proposed use complies with the standards of the base zone.
- D. The planning commission shall hear and decide appeals and requests for variances when it is alleged there is an error in any requirement, decision or determination made by the building official in the enforcement or administration of these regulations, or that enforcement of this district would result in exceptional hardship. In passing upon such applications, the planning commission shall consider all technical evaluations, all relevant factors, standards specified in other sections of this title, 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 floodwaters and the effects of wave action, if applicable, expected at the site; and
  11. The cost 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.
- E. Upon consideration of the factors listed in subsection D of this section and the purposes of this district, the planning commission may attach such conditions to the granting of variances as it deems necessary to meet the purposes of this district.

- F. The city recorder shall maintain the records of all appeal actions and the building official shall report any granted variances to the Federal Insurance Administration upon request.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

#### 17.42.150 - Conditions for variances.

The planning commission, pursuant to Chapter 17.60, may impose such conditions as are deemed necessary to limit any adverse impacts that may result from granting relief. If a variance is granted pursuant to Section 17.42.140, the variance shall be subject to the conditions set out in this section. In addition to other standards listed in Section 17.42.160, the following conditions must be met:

- A. Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register or identified as a locally designated historic structure and without regard to the procedures set forth in the remainder of this chapter.
- B. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- C. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- D. Variances shall only be issued upon a showing of good and sufficient cause.
- E. A determination that failure to grant the variance would result in exceptional hardship to the applicant.
- F. Variances as interpreted in the national flood insurance program are based on the general zoning law principle that they pertain to a physical piece 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.
- G. 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 as set forth in this chapter.
- H. A variance from the elevation standard may only be issued for new construction, and substantial improvements to be erected on a lot of one-half acre or less in size, that are to contiguous and surrounded by lots with existing structures constructed below the base flood level. As the lot size increases the technical justification required for issuing the variance increases.
- I. Variances shall not result in increased flood heights, additional threats to public safety, extraordinary public expenses, cause nuisances, cause fraud on or victimization of the public or conflict with existing laws or ordinances.
- J. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with the lowest flood elevation below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

#### 17.42.160 - Flood management area standards.

- A. Uses Permitted Outright:

1. Excavation and fill required to plant any new trees or vegetation.
  2. Restoration or enhancement of floodplains, riparian areas, wetland, upland and streams that meet federal and state standards provided that any restoration project which encroaches on the floodway complies with the requirements of Section 17.42.190 (Floodways).
- B. Provisional Uses.
1. All uses allowed in the base zone or existing flood hazard overlay zone are allowed in the flood management overlay district subject to compliance with the development standards of this section.
- C. Prohibited Uses.
1. Any use prohibited in the base zone;
  2. Uncontained areas of hazardous materials as defined by the Department of Environmental Quality.
- D. Site Development Standards. All development in the floodplain shall conform to the following balanced cut and fill standards:
1. This subsection does not apply to work necessary to protect, repair, maintain or replace existing structures, utility facilities, roadways, driveways, accessory uses and exterior improvements in response to emergencies provided that, after the emergency has passed, adverse impacts are mitigated in accordance with applicable standards.
  2. No net fill in any floodplain is allowed. All fill placed in a floodplain shall be balanced with at least an equal amount of soil material removed. For the purpose of calculating net fill, fill shall include any structure below the design flood elevation that has been floodproofed pursuant to subsection (E)(5) of this section.
  3. Any excavation below bankfull stage shall not count toward compensating for fill.
  4. Excavation to balance a fill shall be located on the same parcel as the fill unless it is not practicable to do so. In such cases, the excavation shall be located in the same Oregon City floodplain, so long as the proposed excavation and fill will not increase flood impacts for surrounding properties as determined through hydrologic and hydraulic analysis.
  5. For excavated areas identified by the city to remain dry in the summer, such as parks or mowed areas, the lowest elevation of the excavated area shall be at least six inches above the winter "low water" elevation, and sloped at a minimum of two percent towards the protected water feature pursuant to Chapter 17.49. One percent slopes will be allowed in smaller areas.
  6. For excavated areas identified by the city to remain wet in the summer, such as a constructed wetland, the grade shall be designed not to drain into the protected water feature pursuant to Chapter 17.49.
  7. Parking areas in the floodplain shall be accompanied by signs that inform the public that the parking area is located in a flood management area and that care should be taken when the potential for flooding exists.
  8. Temporary fills permitted during construction shall be removed at the end of construction, thirty days after subdivision acceptance or completion of the final inspection.
  9. 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.
  10. 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 lands.



E. Construction Standards.

1. Anchoring.

- a. All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure.
- b. All manufactured homes must likewise be anchored to prevent flotation, collapse or lateral 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" guidebooks for additional techniques).

2. Construction Materials and Methods.

- a. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
- b. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.
- 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. Utilities.

- a. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
- b. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters.
- c. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

4. Residential Construction.

- a. New construction and substantial improvements of any residential structure shall have the lowest floor, including basement, elevated to at least one foot above the design flood elevation.
- b. Fully enclosed areas below the lowest floor that are subject to flooding are prohibited unless they are designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:
  - i. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.
  - ii. The bottom of all openings shall be no higher than one foot above grade.
  - iii. Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

5. Nonresidential Construction.

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

- i. Be floodproofed so that below the design flood level the structure is watertight with walls substantially impermeable to the passage of water provided that the requirements of subsection D.2. of this section are met;
- ii. Have structured components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;
- iii. Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided to the official as set forth in Section 17.42.110B.;
- iv. Nonresidential structures that are elevated, not floodproofed, must meet the same standards for space below the lowest floor as described in subsection E.4.b. of this section; and
- v. 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 constructed to the design flood level will be rated as one foot below that level).
- vi. **Manufactured Homes.** The following standards apply to all manufactured homes to be placed or substantially improved on sites within Flood Hazard Areas.

When manufactured dwellings are installed in flood hazard areas, they shall be elevated and anchored according to the Oregon Residential Specialty Code.

- F. **Recreational Vehicles.** Recreational vehicles placed on sites within Zones A1-30, AH and AE as shown on the flood insurance rate map shall:
  1. Be on site for fewer than one hundred eighty consecutive days, and be fully licensed and ready for highway use, on its wheels or jacking system, attached to the site only by quick disconnect type utilities and security devices, and have no permanently attached additions; or
  2. Meet the requirements of subsection E.6. of this section and the elevation and anchoring requirements for manufactured homes.
- G. **Below Grade Crawlspace.** Below grade crawlspaces are allowed subject to the following standards. It should be noted that there are potential increased charges to personal insurance costs for below grade crawlspaces.
  1. The building shall 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 effects of buoyancy can usually be addressed through the required openings stated in subsection 2. 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.
  2. 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.
  3. 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.

4. Any building utility systems within the crawlspace must be elevated above BFE or designed so that floodways 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.
5. The interior grade of a crawlspace below the BFE must not be more than two feet below the lowest adjacent exterior grade.
6. 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 limitations is the maximum allowable unsupported wall height according to the engineering analyses and building code requirements for flood hazard areas.
7. 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.
8. The velocity of floodwaters at the site should not exceed five feet per second for any crawlspace. For areas with floodwater velocities in excess of five feet per second, below grade crawlspaces are prohibited.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

#### 17.42.170 - Review of building permits.

Where elevation data is not available either through the flood insurance study, FIRM or from another authoritative source (Section 17.42.110), application for building permits shall be reviewed to assure that proposed construction will be reasonably safe from flooding. The test of reasonableness shall be made by the building official, considering use of historical data, high water marks, photographs of past floodings, etc., where available, and the provisions of this title. Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

#### 17.42.180 - Subdivision standards.

##### A. Subdivision Proposals.

1. All subdivision proposals shall be consistent with the need to minimize flood damage.
2. 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.
3. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.
4. 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 fifty lots or five acres (whichever is less).
5. All structures and site grading developed or conducted in conjunction with a subdivision proposal shall comply with Section 17.42.160, flood management area standards.

##### B. The purpose of this section is to allow density accruing to portions of a property within the flood management overlay district to be transferred outside the overlay district.

1. Density transfers shall be allowed if the applicant demonstrates compliance with the following standards:
  - a. The density transfer is proposed as part of a subdivision.
  - b. Minimum density standards will not increase due to the density transfers.
  - c. The area of land contained in a flood management area may be excluded from the calculations for determining compliance with minimum density requirements of the zoning code.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)

#### 17.42.190 - Floodways.

Located within areas of special flood hazard established in Section 17.42.030 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. Encroachments, including fill, new construction, substantial improvements and other development shall be prohibited unless certification by a registered professional engineer or architect is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.
- B. If subsection A of this section is satisfied, all new construction and substantial improvements shall comply with all applicable flood management area standards of Sections 17.42.160 through 17.42.190.
- C. Below-grade crawlspace construction is allowed in the floodplain in accordance with the Oregon Residential Specialty Code and the Oregon State Structural Specialty Code as adopted by local building code.
- D. 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.

(Ord. No. 08-1014, §§ 1—3(Exhs. 1—3), 7-1-2009; Ord. No. 10-1003, § 1(Exh. 1), 7-7-2010)