

CITY OF TROUTDALE

FLOODPLAIN MANAGEMENT STANDARDS

TROUTDALE DEVELOPMENT CODE CHAPTER 1 DEFINITIONS

1.040 Vegetation Corridor and Slope District, and Water Quality and Flood Management

Definitions. [Adopted by Ord. 550, ef. 9/25/90; Amended by Ord. 607, ef. 8/11/94; Amended by Ord. 702, ef. 11/24/00; Amended by Ord No. 798, ef. 12/18/09]

- .01 100-Year Flood. The flood that is equaled or exceeded once in 100 years on the average; equivalent to the one percent annual chance flood. Also called the Special Flood Hazard Area, Base Flood, and 100-year floodplain.
- .02 Appeal. A request for a review of the Director’s interpretation of any provision of this code or request for a variance from requirements of chapter 4.600, Flood Management Area, of this code.
- .03 Bankfull Stage. As defined in the Oregon Administrative Rules pertaining to removal/fill permits, the stage or elevation at which water overflows the natural banks of a stream or other waters of the state and begins to inundate upland areas. In the absence of physical evidence, the two-year recurrent flood elevation (storm level) may be used to approximate the bankfull stage. The bankfull stage is the starting point for measuring the width of a vegetation corridor from a protected water feature. In the absence of any data to establish the bankfull stage or two-year storm event, the starting point for measuring the vegetation corridor is determined by the following indicators:
 - a. Water marks on fixed objects (vegetation, rocks, buildings, etc.);
 - b. Drift lines (deposited waterborne twigs, litter, etc.); or
 - c. Waterborne sediment deposits on the soil surface or fixed objects (vegetation, rocks, buildings, etc.)
- .04 Base Flood. A flood having a one percent chance of being equaled or exceeded in any given year. Also referred to as the “100-year” flood.

- .05 Basement. Any area of the building having its flood subgrade (below ground level) on all sides.
- .06 Conservation Easement. An easement applied to environmentally sensitive lands including, but not limited to, lands identified as hillsides, wetlands, floodplains, and floodways. The field verification shall be done by a licensed surveyor, engineer, hydrologist, or any other licensed specialist in the fields of engineering, hydrology, or botany. A conservation easement prohibits most forms of development and assures that native vegetation will be maintained or enhanced. Conservation easements usually affect privately owned land and are enforceable by the City. Trails and limited public facilities may be permitted under carefully controlled conditions within conservation easements.
- .07 Construction, Start of. Start of construction includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction on a site, such as the pouring of slab or footings, paving a parking lot, installation of piles, construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; installation of streets and/or walkways; excavation for a basement, footings, piers, or foundation; erection of temporary forms; or installation of accessory buildings on the property, such as garages or sheds not occupied as dwelling units or not part of the main structure.
- .08 Debris. Debris includes discarded manmade objects and may include tires, vehicles, litter, scrap metal, construction waste, lumber, plastic, or styrofoam. Debris does not include objects necessary to a use allowed by this code, or ornamental and recreational structures. Debris does not include existing natural plant materials or natural plant materials which are left after flooding, downed or standing dead trees, or trees which have fallen into protected water features.
- .09 Department of Environmental Quality (DEQ) Water Quality Standards. DEQ water quality standards are the numerical criteria or narrative condition needed in order to protect an identified beneficial use.
- .10 Design Flood Elevation. The elevation of the 100-year storm as defined in the Federal Emergency Management Agency Flood Insurance Studies or, in areas

without Federal Emergency Management Agency floodplains, the elevation of the 25-year storm or the edge of mapped flood-prone soils or similar methodologies.

- .11 Developer. The owners of property, their agents or contractors, or their successors and assigns, who have undertaken or are proposing development which is regulated by chapters 4.300, Vegetation Corridor and Slope District; 4.600, Flood Management Area; 5.600, Erosion Control and Water Quality Standards; and 5.800, Stormwater Management, of this code.
- .12 Development. Any manmade change to improved or unimproved real estate including, but not limited to, construction, installation, or change of a building or structure; land division; storage on the land; tree cutting; drilling; and site alteration such as that due to land surface mining, dredging, grading, paving, excavating, or clearing. Development does not include the following:
- a. Stream enhancement or restoration projects approved by any of the following: Oregon Division of State Lands, Oregon Department of Fish and Wildlife, U.S. Army Corps of Engineers, the City, or Multnomah County.
 - b. Farming practices and farm use, as defined in the Oregon Revised Statutes, which were actively occurring prior to December 1999, and all modifications to existing buildings. Construction of new buildings associated with farm practices and farm uses are subject to the requirements of section 5.080, Agricultural Use Permitted, and subsection 5.611(E) of this code.
- .13 Disturb. Any manmade changes to the existing physical status of the land which are made in connection with development. The following uses are excluded from the definition:
- a. Enhancement or restoration of the Water Quality Resource Area.
 - b. Planting native cover identified in the Metro Native Plant List.
- .14 Elevation Certificate. A form supplied by the Federal Emergency Management Agency (FEMA) and used to document the lowest floor elevation of a building.

- .15 Emergency. Any manmade or natural event or circumstance causing or threatening loss of life, injury to person or property, and includes, but is not limited to, fire, explosion, flood, severe weather, drought, earthquake, volcanic activity, spills or releases of oil or hazardous material, contamination, utility or transportation disruptions, and disease.
- .16 Engineer. A registered professional engineer licensed by the State of Oregon.
- .17 Enhancement. The process of improving upon the natural functions and/or values of an area or feature which has been degraded by human activity. Enhancement activities may or may not return the site to a pre-disturbance condition, but create/recreate processes and features that occur naturally.
- .18 Erosion. Erosion is the detachment and movement of soil particles, rock fragments, or other material, organic or inorganic, resulting from actions of water, wind, human, or animal activity.
- .19 Erosion Prevention and Sediment Control Plans, Technical Guidance Handbook. The reference authority for erosion control, abbreviated as “The Handbook”, published by the City of Portland Bureau of Environmental Services and Unified Sewerage Agency of Washington County. The most current edition shall be used. The Community Development Director and Public Works Director may also develop regulations and procedures in accordance with “The Handbook” to implement erosion control measures as needed.
- .20 Erosion, Visible or Measurable. Visible or measurable erosion includes, but is not limited to:
- a. Deposits of mud, dirt sediment, or similar material exceeding one-half cubic foot in volume on public or private streets, adjacent property, or onto the storm and surface water system, either by direct deposit, dropping discharge, or as a result of the action of erosion.
 - b. Evidence of concentrated flows of water over bare soils, turbid or sediment laden flows, or evidence of onsite erosion such as rivulets on bare soil slopes where the flow of water is not filtered or captured on the site.
 - c. Earth slides, mudflows, earth sloughing, or other earth movement that leaves the property.

- .21 Excavation. Any act by which soil or rock is cut into, dug, quarried, uncovered, removed, displaced, or relocated.
- .22 Federal Emergency Management Agency (FEMA). An independent federal agency reporting to the President. FEMA is responsible for coordinating the federal response to floods, earthquakes, hurricanes, and other natural or manmade disasters and providing disaster assistance to states, communities, and individuals. FEMA administers the National Flood Insurance Program (NFIP).
- .23 Fill. Any material such as, but not limited to, sand, soil, rock, gravel, clay, or mud that is placed on a site for the purposes of development or redevelopment.
- .24 FIRM. See Flood Insurance Rate Map.
- .25 Flood or Flooding. A general and temporary condition of partial or complete inundation of normally dry land areas from:
- a. The overflow of inland or tidal waters; and/or
 - b. The unusual and rapid accumulation of runoff of surface waters from any source.
- .26 Flood Insurance Rate Map (FIRM). The official map of a community for which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.
- .27 Flood Insurance Study (FIS). A report published by FEMA that provides detailed information on a community's flood hazard areas. The FIS normally includes topographic information, floodplain and floodway data charts, study information, and stream profiles.
- .28 Flood Management Area (FLMA). All lands contained within the 100-year floodplain and floodway as shown on the Flood Insurance Rate Map, and-the area of inundation for the February 1996 flood. In addition, all lands which have documented evidence of flooding.

- .29 Floodplain. Any land area, such as the lowland and relatively flat areas adjoining inland waters, susceptible to being inundated by water from any source, including land that may be covered temporarily by water as a result of a storm event.
- .30 Floodplain, 100-Year. See Base Flood.
- .31 Floodway. The portion of a watercourse required for the passage or conveyance of a given storm event as identified and designated on the Flood Insurance Rate Map as produced by the Federal Emergency Management Agency. The floodway shall include the channel of the watercourse and the adjacent floodplain that must be reserved in an unobstructed condition in order to discharge the base flood without increasing the flood levels by more than one foot.
- .32 Invasive Non-native or Noxious Vegetation. Plant species that are listed as nuisance plants or prohibited plants on the Metro Native Plant List as adopted by Metro Council resolution because they are plant species that have been introduced and, due to aggressive growth patterns and lack of natural enemies in the area where introduced, spread rapidly into native plant communities.
- .33 Joint Fill Permit/404 Removal/Fill Permit. A permit issued jointly by the Oregon Division of State Lands and U.S. Army Corps of Engineers to allow, with conditions and mitigation, the removal or fill of wetlands determined to be of either local or state significance by the Oregon Division of State Lands.
- .34 Lowest Floor. The lowest floor of the lowest enclosed area of a building (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 the flood hazard regulations.
- .35 Mitigation. The reduction of adverse effects of a proposed project by considering, in this order:
- a. Avoiding the impact altogether by not taking a certain action or parts of an action;
 - b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

- c. Rectifying the impact by repairing, rehabilitating, or restoring the effected environment;
 - d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action by monitoring and taking appropriate measures; and
 - e. Compensating for the impact by replacing or providing comparable substitute water quality resource areas.
- .36 Mulch. Application of plant residue, netting, or other suitable materials to the land surface to conserve moisture, hold soil in place, and aid in establishing plant cover.
- .37 NAVD 88. The North American Vertical Datum of 1988 (NAVD 88) is the vertical control datum established in 1991 by the minimum-constraint adjustment of the Canadian-Mexican-U.S. leveling observations. This is the data used on FIRMs and in flood insurance studies adopted in 2009.
- .38 NGVD 29. “The National Geodetic Vertical Datum of 1929: The name, after May 10, 1973, of (the) Sea Level Datum of 1929.” (Vertical control datum established for vertical control in the United States by the general adjustment of 1929.) This is the datum used on FIRMs and in flood insurance studies prior to 2009.
- .39 National Flood Insurance Program (NFIP). A federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages.
- .40 Native Vegetation or Native Plant. Vegetation listed as a native plant on the Metro Native Plant List as adopted by Metro Council resolution and any other vegetation native to the Portland metropolitan area provided that it is not listed as a nuisance plant or a prohibited plant on the Metro Native Plant List.
- .41 National Wetland Inventory (NWI) Map. The City is mapped on the Camas and Washougal, Washington-Oregon wetland maps prepared by the U.S. Department of the Interior, Fish and Wildlife Service.

- .42 NPDES Permit. The National Pollutant Discharge Elimination System 1200-C Permit is a State of Oregon, Department of Environmental Quality permit that covers federal stormwater regulations as they pertain to construction activities in Oregon. The permit is administered by the City.
- .43 ODFW Construction Standards. The Oregon Department of Fish and Wildlife construction guidelines for building roads, bridges, and culverts, or any transportation structure within a waterway.
- .44 One Percent Annual Chance Flood. The flood that has a one percent chance of being equaled or exceeded on the average in any given year; equivalent to the 100-year flood.
- .45 Open Space. Land that is undeveloped and that is planned to remain so indefinitely. The term encompasses parks, forests, and farmland. It may also refer only to land zoned as being available to the public, including playgrounds, watershed preserves, and parks.
- .46 Perennial Streams. All primary and secondary perennial waterways mapped by the U.S. Geological Survey, having year-round flow.
- .47 Practicable. Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose.
- .48 Pre-FIRM Structures. Buildings that were built before the flood risk was known and identified on the community's FIRM.
- .49 Protected Water Features, Primary. Includes:
- a. Title 3 wetlands.
 - b. Rivers, streams (creeks or brooks) and drainages downstream from the point at which 100 acres or more are drained to that water feature (regardless of whether it carries year-round flow).
 - c. Streams carrying year-round flow.
 - d. Springs which feed streams and wetlands and have perennial (year-round) flow.

- e. Natural lakes.
- .50 Protected Water Features, Secondary. Includes intermittent streams and seeps downstream of the point at which 50 acres are drained and upstream of the point at which 100 acres are drained to that water feature.
- .51 Restoration. The process of returning a disturbed or altered area or feature to a previously existing natural condition. Restoration activities reestablish the structure, function, and/or diversity to that which occurred prior to impacts caused by human activity.
- .52 Resource. A functioning natural system such as a wetland or stream.
- .53 Riparian. Those areas associated with streams, lakes, and wetlands where vegetation communities are predominately influenced by their association with water.
- .54 Routine Repair and Maintenance. Activities directed at preserving an existing allowed use or facility, or nonconforming use, without expanding the development footprint or site use.
- .55 Sediment. Any material that is in suspension, is being transported, or has been moved from its site of origin by water, wind, or gravity as a result of erosion.
- .56 Site. The lot, or contiguous lots, under the same ownership that are subject to a development permit or erosion control plan.
- .57 Slope District. Slopes of 25% or greater throughout the City that have a minimum horizontal distance of 50 feet. Engineered slopes associated with public streets or roads are not included.
- .58 Special Flood Hazard Area (SFHA). The term used by the National Flood Insurance Program for areas inundated by 100-year flood. The SFHA is mapped on the flood insurance rate maps (FIRM). The SFHA is the area where floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.
- .59 Statewide Planning Goal 5. Oregon's statewide planning goal that addresses open space, scenic and historic areas, and natural resources. The purpose of the goal is to conserve open space and protect natural and scenic resources.

- .60 Statewide Planning Goal 6. Oregon’s statewide planning goal that addresses air, water, and land resources quality to “maintain and improve the quality of the air, water, and land resources of the state” as implemented by the Land Conservation and Development Commission (LCDC).
- .61 Statewide Planning Goal 7. Oregon’s statewide planning goal that addresses areas subject to natural disasters and hazards to “protect life and property from natural disasters and hazards” as implemented by the Land Conservation and Development Commission.
- .62 Stockpile. Onsite storage of any soil, sand, gravel, clay, mud, debris, vegetation, refuse, or any other material, organic or inorganic, in a concentrated state.
- .63 Stream. A body of running water moving over the earth’s surface in a channel or bed, such as a creek, rivulet, or river, that flows at least part of the year, including perennial and intermittent streams. Streams are dynamic in nature and their structure is maintained through build-up and loss of sediment.
- .64 Stream Bank, Top of. See Bankfull Stage.
- .65 Structure. A building or other improvement that is built, constructed, or installed.
- .66 Substantial Improvement.
- a. There are three occasions when work on an existing building is considered a substantial improvement.
 1. Any improvement of a structure, the cost of which exceeds 50% of the market value of the structure.
 2. Reconstruction or repair of a building, that exceeds 50% of the market value of the structure before it was damaged.
 3. Additions to an existing structure when the addition increases the market value of a structure by more than 50% or the floor area by more than 20%.
 - b. The term does not include:

1. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or
 2. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.
- .67 Surface Water Management System. All natural and constructed facilities used to regulate the quantity and quality of surface water, including drainage easements, culverts, storm drains, catch basins, drainage ditches, natural drainageways, stream corridors, rivers, ponds, wetlands, and impoundments.
- .68 Title 3. Title 3 is part of the Metro Urban Growth Management Functional Plan pertaining to water quality, flood management, and fish and wildlife conservation, and directly pertains to Statewide Planning Goals 5, Open Spaces, Scenic and Historic Areas, and Natural Resources; 6, Air, Water, and Land Resources Quality; and 7, Areas Subject to Natural Disasters and Hazards.
- 69 Vegetation, Approved. Vegetation which typically does not require irrigation or fertilization because it is adapted to natural soil, water, and climatic conditions. The list of approved vegetation species is based on the Metro Native Plant List, and is on file in the Community Development Department.
- .70 Vegetation Corridor. The undisturbed area between a development and a protected water feature as designated in sections 4.316, Width of Vegetation Corridor, and 4.317, Method for Determining Vegetation Corridors Next to Primary Protected Water Features, of this code, or slopes of 25% or greater throughout the City, except engineered slopes associated with public streets or roads.
- .71 Vegetation, Invasive, Non-Native, or Noxious. Plant species that have been introduced and due to aggressive growth patterns and lack of natural enemies in the area where introduced, spread rapidly into native plant communities, or which are not listed on the Metro Native Plant List.
- .72 Vegetation, Native. Any vegetation native to the Portland Metropolitan Area or listed on the Metro Native Plant List.
- .73 Water Features. See Protected Water Features, primary and secondary.

- .74 Water Quality Facility. A created or constructed structure or drainageway that is designed, constructed, and maintained to collect, filter, retain, or detain, surface water runoff during and after a storm event for the purpose of stormwater management and water quality improvement. The facility may take on characteristics of a wetland, but it does not become a resource.
- .75 Watershed. A geographic unit defined by the flows of rainwater or snowmelt. All land in a watershed drains to a common outlet, such as a stream, lake, or wetland.
- .76 Wetlands. Areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands are those areas identified and delineated by qualified wetland specialists as set forth in the 1987 Corps of Engineers Wetland Delineation Manual.
- a. Wetland determinations. The identification of an area as either wetland or non-wetland.
 - b. Wetlands, constructed. Wetlands developed as a water quality or quantity facility, subject to change and maintenance as such. These areas must be clearly defined and/or separated from naturally occurring or created wetlands.
 - c. Wetlands, created. Those wetlands developed in an area previously identified as a non-wetland to replace or mitigate wetland destruction or displacement. A created wetland shall be regulated and managed the same as an existing wetland.
 - d. Wetlands, Title 3. Wetlands of metropolitan concern as shown on the Metro Water Quality and Flood Management Overlay District Map and other wetlands not mapped but determined significant by the Oregon Department of State Lands, consistent with the criteria in Title 3, Section 7.C. of the Metro Urban Growth Management Functional Plan. Title 3 wetlands include created wetlands approved and monitored by the Oregon Department of State Lands and U.S. Army Corps of Engineers. Title 3 wetlands do not include artificially constructed and managed stormwater and water quality treatment facilities.

4.600 FLOOD MANAGEMENT AREA**FLMA**

[Adopted by Ord. 702, ef. 11/24/00; amendment by Ord No. 798, ef. 12/18/2009]

4.610 Purpose. The purpose of this chapter is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions or degradation of water quality in specific areas by provisions designed to:

- A. Protect human life and health;
- B. Minimize expenditure of public money and costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- D. Minimize prolonged business interruptions;
- E. Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone, and sewer lines; streets; and bridges located in areas of special flood hazard;
- F. 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;
- G. Ensure that potential buyers are notified that property is in an area of special flood hazard;
- H. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions;
- I. Maintain and improve water quality;
- J. Minimize erosion and loss of native vegetation;
- K. Maintain wetlands, including swamps, marshes, bogs, and similar areas within the City, because wetlands help to maintain water quality and flood storage capacities; and
- L. Avoid any increase in base flood elevations as a result of development;
- M. Comply with Statewide Planning Goal 7 Areas Subject to Natural Disasters and Hazards.

4.611 Methods of Reducing Flood Losses and Maintaining Water Quality. This chapter includes methods and provisions for:

- A. Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion, flood heights, or velocities.
- B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.
- C. Controlling the alteration of natural, floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters.
- D. Controlling filling, grading, dredging, and other development which may increase flood damage.
- E. Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or may increase flood hazards in other areas.
- F. Maintaining and reintroducing approved vegetation which minimizes erosion and helps to maintain and improve water quality.
- G. Coordinating and supplementing the provisions of the state building code.

4.612 Applicability.

- A. This chapter shall apply to all development of land within the Flood Management Area (FLMA) and wetlands within the planning jurisdiction of the City, which includes land in unincorporated Multnomah County within the City's Urban Planning Area.
- B. The Flood Management Area development standards apply to the 100-year floodplain as mapped by the Department of Homeland Security, Federal Emergency Management Agency (FEMA) on the county-wide Flood Insurance Rate Map (FIRM) covering the cities of Fairview, Gresham, Troutdale and Wood Village, and the unincorporated areas of Multnomah County and titled: "FIRM Flood Insurance Rate Map, Multnomah County, Oregon and Incorporated Areas, Map Number 41051C," effective December 18, 2009, areas of flooding in 1996 as mapped by Metro, and wetlands. The FIRM is supported by county-wide Flood Insurance Study Number 41051CV000A, effective December 18, 2009, entitled "Flood Insurance Study, Multnomah County, Oregon and Incorporated Areas,"

published by FEMA, covering the cities of Fairview, Gresham, Troutdale, and Wood Village, and the unincorporated areas of Multnomah County. Metro mapped the flood hazard areas from the Flood Insurance Rate Map and areas inundated by flooding in 1996 on the Title 3 map. The Title 3 maps, the Flood Insurance Study, and the Flood Insurance Rate Map are adopted for reference only. The applicant for development within this area shall be responsible for precisely establishing base flood elevations and delineating the boundaries of the Flood Management Area based upon site-specific field surveys and delineations certified by a licensed engineer or surveyor. Contested base flood elevations are to be reviewed under the provisions of subsection 4.613(C) of this chapter. The City will keep a record of all surveys, delineations, and any Letter of Map Amendments (LOMA) approved by the Federal Emergency Management Agency, as revisions to the local copy of the Title 3 map. The City will submit this information to Metro for future updates of the Title 3 map. A field survey shall consist of the following:

1. 100-year floodplain boundaries, and the base flood elevation based upon the North American Vertical Datum of 1988 (NAVD 88).
2. The 1996 flood boundaries established by Metro.
3. Floodway boundaries as determined by datum available from the FIRM and Flood Insurance Study.
4. The name, location, and dimensions of affected streams or rivers, and the bankfull stage or the two-year storm level.
5. The area comprising the vegetation corridor as established by sections 4.316, Width of Vegetation Corridor, and 4.317, Method for Determining Vegetation Corridors Next to Primary Protected Water Features, of this code.
6. Wetlands that are determined significant by the Oregon Division of State Lands or have the following characteristics. All wetland determinations made prior to development must be reviewed and acknowledged by the Oregon Division of State Lands prior to issuance of City permits. The characteristics shall be determined by a qualified scientist.
 - a. The wetland is fed by surface flows, sheet flows, or precipitation; has evidence of flooding during the growing season; at least 60% of the area is vegetation; and is over one-half acre in size; or, the wetland

qualifies as having “intact water quality function” under the 1996 Oregon Freshwater Wetland Assessment Methodology; or

- b. The wetland is in the Flood Management Area; has evidence of flooding during the growing season; is five acres or more in size; and has a restricted outlet or no outlet; or, the wetland qualifies as having “intact hydrologic control function” under the 1996 Oregon Freshwater Wetland Assessment Methodology; or
 - c. The wetland, or a portion of the wetland, is within a horizontal distance of less than one-fourth mile from a water body which meets the Department of Environmental Quality definition of “water quality limited water body” in OAR Chapter 340, Division 41 (1996).
- C. **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 manmade or natural causes. This code does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damage. This code shall not create liability on the part of the City, any officer or employee thereof, or the Federal Insurance Administration, for any damages that result from reliance on this code or any administrative decision lawfully made hereunder.

4.613 Administration and Interpretation of Flood Insurance Rate Map Boundaries and Edge of Bankfull Stage or Two-Year Storm Level.

- A. The Community Development Director, or designee, is the Local Administrator and shall implement the provisions and standards of the National Flood Insurance Program, the standards of this chapter, and make interpretations, where needed, as to the exact location of the boundaries of the floodplain (for example, where there appears to be a conflict between a mapped boundary and actual field conditions). In the interpretation and application of this chapter, all provisions shall be:
1. Considered as minimum requirements;
 2. Judged by established historical facts of flooding as known by, or made known to, the governing body;
 3. Deemed neither to limit nor repeal any other powers granted under state statutes; and

4. Defined in section 1.040, Vegetation Corridor and Slope District, and Water Quality and Flood Management Definitions, of this code.
- B. Use of Other Base Flood Data. When base flood elevation data is not available through the Flood Insurance Study, FIRM, or has not been provided in accordance with section 4.612, Applicability, of this chapter, the City may obtain, review, and utilize any reasonable base flood elevation and floodway data available from the developer or property owner, or a federal, state, or other source, in order to manage development within the Flood Management Area. The test of reasonableness shall be based upon historical data, high water marks, photographs of past flooding, etc., where available. Failure to elevate the lowest floor at least two feet above grade in these zones may result in higher insurance rates.
- C. Contested Boundaries. A person contesting the location of the boundary has the opportunity to submit a Letter of Map Amendment directly to the Federal Emergency Management Agency to change the Flood Insurance Rate Map mapping of their property. If a land use application is submitted before a Letter of Map Amendment is approved by the Federal Emergency Management Agency, the application will be processed under the standards of this chapter.

4.614 Uses Within the Floodplain but Outside the Floodway and Outside Wetlands.

- A. Prohibited Uses.
 1. Any prohibited use in the underlying zoning district.
 2. Excavation, fill, or vegetation removal without an approved land use permit.
 3. Expansion of legal nonconforming uses.
 4. Outside storage of hazardous materials as defined by the Department of Environmental Quality.
 5. No new land divisions will be approved for properties exclusively within the floodplain or that propose to create a buildable lot that is exclusively within the floodplain.

B. Permitted Uses.

1. Any use permitted in the underlying zoning district, subject to the standards for development outlined in section 4.617, Development Standards, of this chapter, including stormwater management facilities developed in accordance with the standards of chapter 5.800, Stormwater Management, of this code.
2. Open space, trails, walkways, and bike paths-as designated by the Troutdale Parks Plan, or as approved with a land use application and constructed in compliance with subsection 4.315D of this code.
3. Removal of refuse and unauthorized fill.
4. Removal of nuisance or invasive plant species, and/or the restoration of approved plant species on the Metro Native Plant List kept on file at the Community Development Department.
5. Removal of dead or dying trees that are an imminent danger to public safety as determined by a certified arborist or the equivalent.
6. Construction of new roadways and utilities necessary to support permitted development within and outside the Flood Management Area, subject to the standards of section 4.617, Development Standards, of this chapter and the construction standards on file in the Public Works Department or the applicable jurisdiction of the roadway.
7. New culverts, stream crossings, and transportation projects may be permitted if designed as balanced cut and fill projects, or designed to not significantly raise the design flood elevation, and in compliance with the standards of section 4.617, Development Standards, of this chapter. 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.
8. Excavation and fill required for the construction of detention facilities or structures, and other facilities such as levees specifically designed to reduce or mitigate flood impacts. Levees shall not be used to create vacant buildable land.

9. Emergency temporary bank stabilization necessitating immediate action during a flood event to prevent the loss of an existing structure, or to repair a bank damaged during a natural flooding event.
10. Routine repair and maintenance of existing structures (conforming and nonconforming uses), streets, driveways, utilities, culverts, drainageways and levees constructed for flood control, accessory uses, and other existing development on the site (including landscaped yards, decks, patios, boat ramps, etc.).
11. Rehabilitation or replacement of a structure that is damaged or destroyed to any extent, whether it is partially or fully within the Flood Management Area, and in compliance with section 4.619, Prescribed Conditions for the Rehabilitation or Replacement of Pre-Existing Structures, of this chapter. Any structure or use deliberately removed or demolished may not be restored, replaced, or rebuilt, except in compliance with all applicable provisions of the Development Code, federal, state, and county regulations.
12. Any development that must implement a Federal Aviation Administration (FAA) compliant wildlife hazard management plan on property owned by the Port of Portland or within 10,000 feet of an Aircraft Operating Area, as defined by the FAA, and removal of trees that interfere with the landing or takeoff flight path of aircraft at the Troutdale Airport or otherwise interferes with the safe operation of the airport as determined by the Port of Portland. The removal of trees that interfere with the operation of the Troutdale Airport are permitted outright.

4.615 Uses within the Floodway or within Wetlands.

- A. Prohibited Uses within the Floodway or within Wetlands. Unless specifically permitted under this section, the following uses are prohibited within floodways and wetlands:
 1. Manmade structures.
 2. Vegetation removal, fill, or excavation.
 3. Private road construction.
 4. Alterations and relocations of the watercourses of Arata, Salmon, or Beaver Creeks, the Sandy and Columbia Rivers, or the watercourse of any unnamed

perennial or intermittent stream except as provided for in subsection (B)(12) of this section and section 4.617(O) of this chapter.

5. Fill of wetlands without both an approved land use application and an approved Joint Fill Permit issued by the Oregon Division of State Lands and the U.S. Army Corps of Engineers.
 6. Storage of uncontained hazardous materials as defined by the Department of Environmental Quality.
 7. Expansion of nonconforming uses.
 8. New installation of manufactured dwellings.
- B. Permitted Uses within the Floodway or within Wetlands. The following uses are permitted subject to review under the standards for development of section 4.617, Development Standards, of this chapter:
1. Open space, trails, walkways, and bike paths, as designated by the Troutdale Parks Plan, or as approved with a land use application.
 2. Removal of refuse and unauthorized fill.
 3. Projects for stream habitat restoration, removal of nuisance or invasive plant species, and/or the restoration of approved plant species from the Metro Native Plant List subject to the approval of a removal/revegetation plan prepared by a licensed landscape architect, landscape designer, botanist, or arborist with specific knowledge of native plant species, planting and maintenance methods, survival rates, and their ability to control erosion and sedimentation in compliance with chapter 5.600, Erosion Control and Water Quality Standards, of this code. A copy of the Metro plant list is available from the Planning Division.
 4. Removal of dead or dying trees that are an imminent danger to public safety as determined by a certified arborist or the equivalent.
 5. Routine repair and maintenance of existing structures (conforming and nonconforming uses), streets, driveways, utilities, culverts, drainageways and levees constructed for flood control by the Sandy Drainage Improvement Company or its successor, accessory uses, and other existing development on the site (including landscaped yards, decks, patios, boat

ramps, and the operation, maintenance, and repair of manmade water control facilities such as irrigation and drainage ditches, constructed ponds or lakes, wastewater facilities, and stormwater quality facilities, and similar development.

6. Construction, expansion, and/or maintenance of public roadways and public utility facilities necessary to support permitted development.
7. Balanced excavation and fill required for the construction of detention facilities or structures and other facilities such as levees specifically designed to reduce or mitigate flood impacts. Levees shall not be used to create vacant buildable lands.
8. New culverts, stream crossings, and transportation projects necessary to implement the City, County, or State Transportation System Plans or other development permitted under this chapter, and as applicable, meets the specifications of the Oregon Department of State Lands, Oregon Department of Fish and Wildlife, and federal regulations.
9. Permanent bank stabilization necessary to preserve an existing structure provided the balanced cut and fill standard is met if the work is in the floodplain or a “No-Rise” certification if the work is within the floodway. Exception: Bank stabilization is not permitted for development on a vacant lot of record.
10. Emergency temporary bank stabilization necessitating immediate action during a flood event to prevent the loss of an existing structure. Following the flood event, the owner shall submit a plan to the City that outlines removal of the temporary bank stabilization or shall apply for a permit for permanent bank stabilization.
11. Fill of wetlands when there is no other practicable way to build on the site as established through subsection 4.617 of this chapter, and provided fill of wetlands within the floodplain is balanced with cut elsewhere within the floodplain, and a Fill/Removal Permit is issued from the Oregon Department of State Lands (DSL) and U.S. Army Corps of Engineers (Corps), as applicable. The application to DSL and the Corps may be processed concurrently with a land use application for site and design review, land division, a planned development application, or a conditional use. A joint fill permit may be applied for prior to application for a land use permit. However, if a joint fill permit is approved by the Oregon Division of State

Lands and the U.S. Army Corps of Engineers prior to applying for the land use application, fill may not proceed until the final decision for the land use application has been made by the City. Mitigation for fill of wetlands and the location of the mitigation shall be as prescribed by the DSL/Corps permit.

12. New drainageways, levees, or alteration of watercourses to accommodate public projects administered by the Sandy Drainage Improvement Company or its successor, the City, Multnomah County, the state, or a federal agency, provided it is in compliance with subsections 4.616(A) and 4.617(R) and (S) of this chapter.
13. Any development that must implement a Federal Aviation Administration (FAA) compliant wildlife hazard management plan on property owned by the Port of Portland or within 10,000 feet of an Aircraft Operating Area, as defined by the FAA, and removal of trees that interfere with the landing or takeoff flight path of aircraft at the Troutdale Airport or otherwise interferes with the safe operation of the airport as determined by the Port of Portland. The removal of trees that interfere with the operation of the Troutdale Airport are permitted outright.

4.616 Permit Required. A Flood Hazard Permit is required for development within the Flood Management Area except as noted:

A. The following activities do not require a Flood Hazard Permit:

1. Routine repair of public streets and public utilities that occurs entirely within the right-of-way.
2. Routine repair of railroads that occurs entirely within the railroad right-of-way.
3. Flood management activities conducted by the Sandy Drainage Improvement Company (SDIC). Routine operations, repair, maintenance, reconfiguration, rehabilitation, or replacement of existing drainage and flood control facilities, and existing related facilities, including any structures, pump stations, water control structures, culverts, irrigation systems, roadways, utilities, accessory uses (such as off-load facilities that facilitate water-based maintenance), erosion control projects, levees, soil and bank stabilization projects, dredging and ditch clearing within the hydraulic cross-section in existing storm water conveyance drainageways, or other water

quality and flood storage projects applicable to existing facilities and required to be undertaken pursuant to ORS Chapters 547 or 554 or Titles 33 or 44 of the Code of Federal Regulations, provided that:

- a. These activities are conducted by the Sandy Drainage Improvement Company or its successor or designee;
 - b. The activities are consistent with all other applicable local, state, and federal laws and regulations;
 - c. The activities do not encroach closer to a surface stream or river, wetland, or other body of open water than existing operations and development;
 - d. Disturbed areas are replanted with vegetation and no bare soils remain after project completion; the planting of native vegetation and removal of invasive non-native or noxious vegetation is encouraged; invasive non-native or noxious vegetation shall not be planted; and
 - e. The SDIC or its successor submits an annual report to all local permitting agencies in which the district operates, describing the projects the district completed in the previous year and how those projects complied with all applicable federal and state laws and requirements.
4. The removal of refuse.
 5. Removal of nuisance or prohibited plant species that exposes the ground, provided a revegetation plan approved or prepared by the City, state, a federal agency, Metro, SOLV, the West Multnomah Soil & Water Conservation District, or other similar organization, is carried out to provide shade and habitat, prevent erosion of steep slopes and/or sedimentation into the protected water feature. A copy of the plan shall be provided to the Planning Division prior to beginning the work.
 6. Emergency tree removal. In the event that a tree poses an immediate danger to life or property, removal is allowed without a tree removal permit. Following the emergency, the owner shall provide the tree species, diameter, and approximate location on the property to the Planning Division.

7. Development within an area of the site that has been excluded from the Special Flood Hazard Area through a Letter of Map Amendment (LOMA) or it is very clear on the plan view that the area is outside of the Special Flood Hazard area and above the base flood elevation.
 8. Continued use and maintenance of existing gardens or other landscaped areas, orchards or agricultural fields provided no fill is added to the floodplain.
 9. Operation, maintenance, and repair of manmade water control facilities such as irrigation and drainage ditches, constructed ponds or lakes, wastewater facilities, and stormwater quality facilities. An expansion of these facilities will require a Type II Flood Hazard Permit.
- B. A Type I Flood Hazard Permit is required prior to applying for building permits for the following:
1. Construction of a single-family dwelling, including the placement of a manufactured home or repair or alteration of existing single-family dwellings and manufactured homes. An elevation certificate and the information required in subsection (F) of this section shall be submitted with the Flood Hazard Permit application unless it is very clear on the plan view that the structure is on a portion of the site that is naturally elevated one foot or more above the base flood elevation. Single-family dwellings and manufactured homes shall be built in compliance with the applicable development standards in section 4.617, Development Standards, of this chapter.
 2. Any use in the underlying zoning district requiring a Development Permit.
 3. Emergency bank stabilization necessary to preserve an existing structure during an emergency. During the event the permit is not required; however, immediately following the event a Flood Hazard Permit shall be obtained that documents the bank stabilization measures taken during the emergency and the schedule and procedure that will be used to remove any temporary fill, including sand bags. If the stabilization measures will not be removed, a Type II Flood Hazard Permit will be required as well as a “No-Rise” certification and LOMR-F, if applicable.

4. Projects for stream habitat restoration subject to the following standards:
 - a. The project qualifies for a U.S. Army Corps of Engineer's "Regional General Permit" for Stream Habitat Restoration (NWP-2007-1023) and complies with applicable Oregon Department of State Lands standards, as applicable; and
 - b. If within the floodway, a qualified professional (a Registered Professional Engineer) provides a feasibility analysis and certification that the project was designed to keep any rise in 100-year flood levels as close to zero as practically possible given the goals of the project; and
 - c. No structures would be impacted by a potential rise in flood elevation; and
 - d. An agreement to monitor the project, correct problems, and ensure that flood carrying capacity remains unchanged is included in the application.
- C. Type II site and design review and Flood Hazard Permit is required for:
 1. Any use in the underlying zoning district requiring a Type II site and design review.
 2. New or expanded streets or bridges.
 3. New or expanded railroads or trestles.
 4. Permanent bank stabilization or fill within the floodplain or floodway.
 5. Balanced cut and fill activity within the floodplain, with a Letter of Map Revision--Fill.
 6. Fill of wetlands, but if the wetland is outside of the floodplain, a Flood Hazard Permit is not required, only the Site and Design Review.
- D. A Type III procedure and Flood Hazard Permit shall be processed for uses requiring a Type III review in the underlying zoning district, and for all special variances requested from the standards of this chapter.

- E. A Type IV site and design review shall be processed for any proposed alteration of a watercourse of any perennial or intermittent streams.
- F. Submission Requirements. An application for development within the Flood Management Area shall include the following:
 - 1. Topographic survey. Where development, excavation, or vegetation removal is proposed within the Flood Management Area, an on-the-ground topographical survey shall be prepared for the entire site. The survey shall show trees or tree clusters, existing roads, utilities, and structures with two-foot contours. The survey maps shall be provided by the property owner or applicant for development approval.
 - 2. Base flood elevation data. Where base flood elevation data is provided through the City's Flood Insurance Study, or by other means as permitted in this chapter, the developer shall obtain and record the actual elevation lowest floor (including basement) of all new or substantially improved structures, including the placement of a manufactured home, and whether or not the structure contains a basement. This information shall be based upon NAVD 88 and provided on a City Flood Hazard Permit form.
 - a. For all new or substantially improved, elevated, or floodproofed structures, verify and record the actual elevation.
 - b. Where development occurs within Zone A of the Flood Management Area and the Base Flood Elevation (BFE) data is not available either through the Flood Insurance Study or from another authoritative source as authorized in subsection 4.613(B) of this chapter, the Flood Hazard Permit shall be reviewed for compliance with FEMA Publication 265 issued July 1995 "Managing Floodplain Development in Approximate Zone A Areas" and applicable State of Oregon building codes.
 - 3. Hydrology and soils report. This report shall include information on the hydrological activities of the site, the effect of hydrologic conditions on the proposed development, and any hydrological or erosion hazards. This report shall also include characteristics of the soils on the site, suitability for development, its carrying capacity, and erosion or slumping characteristics that might present a hazard to life and property, or adversely affect the use or stability of a public facility or utility. Finally, this report shall include information on the nature, distribution, and strength of existing soils; the

adequacy of the site for development purposes; and an assessment of grading procedures required to impose the minimum disturbance to the natural state. The report shall be prepared by a professional engineer registered in Oregon.

4. Grading plan. The grading plan shall be specific to a proposed physical structure or use and shall include information on terrain (two-foot intervals of property), drainage, direction of drainage flow, location of proposed structures and existing structures which may be affected by the proposed grading operations, water quality facilities, post-grading, and finished contours or elevations, including all cut and fill slopes and proposed drainage channels. Project designs including, but not limited to, locations of surface and subsurface devices, walls, dams, sediment basins, storage reservoirs, and other protective devices shall form part of the submission. The grading plan shall also include a construction phase erosion control plan and a schedule of operations and shall be prepared by a professional engineer registered in Oregon.
5. Vegetation report. This report shall consist of a survey of existing vegetation, whether it is native or introduced, and how it will be altered by the proposed development. Measures for enhancement of the site, including revegetation with approved plant species, will be clearly stated, as well as methods for immediate and long-term stabilization of slopes and control of soil erosion. The vegetation report shall be prepared by a landscape architect, landscape designer, botanist, or arborist with specific knowledge of approved plant species, planting and maintenance methods, survival rates, and their ability to control erosion and sedimentation. The contractor for installation and maintenance will be responsible for replacing any approved plant species that do not survive the first two years after planting.
6. A “No-Rise” certification and a Letter of Map Revision-Fill (LOMR-F) shall be submitted with the land use application for the following activities within the floodway as mapped by FEMA:
 - a. Permanent bank stabilization that occurs in the floodway.
 - b. Development, alterations or relocations of the floodway, including any permanent fill within the floodway.

4.617 Development Standards. The land use application shall establish through the use of narrative, site plans, and professional reports, the following:

- A. New development, including additions or alterations to existing structures, in the Flood Management Area may be allowed, provided that:
 - 1. The applicant shall demonstrate that there is no reasonable nor practical alternative design or method of development that would have a lesser impact on the Flood Management Area than the one proposed.
 - 2. If there is no reasonable nor practical alternative design or method of development the project shall be designed in compliance with applicable parts of subsections (C) through (U) of this section, so that the impacts on the Flood Management Area are limited and the plans shall include restoration, replacement, or rehabilitation of the vegetation within the Flood Management Area.
 - 3. The applicant shall provide mitigation to ensure that impacts to the functions and values of the vegetation corridor and integrity of the slope will be mitigated or restored to the extent practicable.
- B. A professional engineer registered in Oregon must certify that the development will not result in any increase in flood levels during the occurrence of the base flood discharge, and that water quality will not be adversely affected.
- C. As applicable, the development must be authorized by the Oregon Department of State Lands, U.S. Army Corps of Engineers, and the Oregon Department of Fish and Wildlife. The applicant shall obtain and submit a copy of all required state and federal permits for any proposed development in the Flood Management Area, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 USC 1334.
- D. Unless otherwise authorized under the provisions of this chapter, the development shall comply with the underlying zoning district dimensional standards and the minimum vegetation corridor as established in sections 4.316, Width of Vegetation Corridor, and 4.317, Method for Determining Vegetation Corridors Next to Primary Protected Water Features, of this code.
- E. Protect the water quality resource and Flood Management Area functions and values from uncontained areas of hazardous materials as defined by the Department of Environmental Quality water quality standards.
- F. Limit impervious surface areas in the Flood Management Area.

1. The impervious surface of the development may not exceed 30% of the flood plain area, provided the standards of this code are met. Exception: Public roads necessary to serve the transportation needs of the City may exceed 30% of the Flood Management Area.
 2. Clustering of houses and multiple-family units, zero lot line developments, and/or modifications to setbacks may be approved under the Type II procedure in order to accommodate the density permitted within the underlying zoning district and not exceed the impervious surface limitation of 30% of the Flood Management Area on the site.
 3. The Director may grant an administrative variance of up to 50% of any dimensional standard in the underlying zoning district where necessary to avoid construction within the Flood Management Area.
- G. Maintain flood storage capacity. Balanced cut and fill is required for permitted development in the Flood Management Area. Excavation and fill shall be performed in a manner to maintain or increase flood storage and conveyance capacity and not increase design flood elevations. A professional engineer registered in Oregon must certify that the development will not result in any increase in flood levels during the occurrence of the base flood discharge, and that water quality will not be adversely affected. The applicant shall obtain a Conditional Letter of Map Revision-Fill (CLOMR-F) from FEMA prior to grading and filling the site and then obtain and submit the final Letter of Map Revision-Fill (LOMR-F) prior to final inspections, or issuance of a certificate of completion, or issuance of the certificate of occupancy.
1. All fill placed at or below the design flood elevation in the Flood Management Area shall be balanced with at least an equal amount of soil material removal. The development shall be designed to minimize development within the Flood Management Area and amount of fill necessary. Balanced cut and fill may be used to elevate structures but shall not be used for density transfer. Residential density must be calculated prior to changes to the floodplain as a result of balanced cut and fill.
 2. Excavation shall not be counted as compensating for fill if such areas will be filled with water in non-storm winter conditions.

3. The cumulative effect of any proposed development shall not increase the water surface elevation of the base flood. Onsite flood storage capacity shall not decrease as a result of development, vegetation removal, or excavation.
 4. A “No-Rise” certification is required for any fill or permitted development within the floodway pursuant to section 60.3(d)(3) of the National Flood Insurance Program.
 - a. The “No-Rise” supporting data and a copy of the engineering certification must be submitted to, and reviewed by, the City prior to approval of development, and the data shall be submitted with the Flood Hazard Permit.
 - b. The “No-Rise” certification and supporting technical data must stipulate no impact on the 100-year flood elevations, floodway elevations, or floodway widths at the new cross-sections and at all existing cross-sections anywhere in the model.
 - c. A sample “No-Rise” certification is available in the Community Development Department.
- H. Residential Construction, including accessory structures associated with residential dwellings. Note: if more than 50% of the lot being developed is affected by the floodplain, then the minimum density standard of this Code does not apply.
1. Elevate structures. The minimum finished floor elevations, including basement floor, for all new or substantially improved residential structures in the Flood Management Area shall be at least one foot above the base flood elevation, as established by the Federal Emergency Management Agency.
 - a. A Federal Emergency Management Agency National Flood Insurance Program Elevation Certificate shall be submitted with the construction plans unless there is a LOMA for the site or it is very clear on the plan view that the area is outside of the Special Flood Hazard area and above the Base Flood Elevation. The Elevation Certificate shall include the elevation of the lowest floor (including basement). The Elevation Certificate shall be certified by a land surveyor, engineer, or architect who is authorized by state or local law to certify elevation information for construction within specific flood hazard areas.

- b. A second certified Elevation Certificate shall be submitted to the City of Troutdale prior to pouring the foundation.
 - c. A third certified Elevation Certificate shall be submitted after the structure is completed based upon finished construction.
 - d. The City shall maintain the elevation certificates for public inspection.
 2. 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 flood waters. 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:
 - a. 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.
 - b. The bottom of all openings shall be no higher than one foot above grade.
 - c. Openings may be equipped with screens, louvers, or other devices provided that they permit the automatic entry and exit of floodwaters.
3. Below-grade crawlspaces are allowed only when in compliance with the design requirements of FEMA Technical Bulletin 11-01, "Crawlspace Construction for Buildings Located in Special Flood Hazard Areas." Buildings that have below-grade crawlspaces will have higher flood insurance premiums than buildings that have the preferred crawlspace construction with an interior elevation at or above the lowest adjacent exterior grade.
 - a. The building must be designed and adequately anchored to resist flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy. Hydrostatic loads and the effects of buoyancy can usually be addressed through the required openings:

- i. Openings that equalize hydrostatic pressures by allowing for the automatic entry and existence of floodwaters is required. The bottom of each flood vent opening can be no more than one foot above the lowest adjacent exterior grade. See FEMA Technical Bulletin 1-93, Opening in Foundation Walls, for guidance.
 - ii. All portions of the building below the base flood elevation 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. Ductwork or other utility systems located below the insulation may pull away from their supports. See page 8 of Technical Bulletin 1-93 and FEMA Technical Bulletin 2-93 Flood Resistant Materials Requirements.
 - iii. Any building utility systems within the crawlspace must be elevated above the base flood elevation 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, see FEMA 348, Protecting Building Utilities from Flood Damage.
- b. The interior grade of a crawlspace below the base flood elevation must not be more than two feet below the lowest adjacent exterior grade.
 - c. The height of the below-grade crawlspace, measured from the interior grade of the crawlspace to the top of the crawlspace foundation wall must not exceed four feet at any point. The height limitation is the maximum allowable unsupported wall height according to the engineering analyses and building code requirements for flood hazard areas. Crawlspaces may not be converted to basements.
 - d. 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.

- e. Crawlspace construction is not recommended 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. For velocities in excess of five feet per second, other foundation types should be used.
4. Substantial improvements of existing dwellings will require elevation of any non-elevated structure to one foot above the Base Flood Elevation in compliance with this section. Substantial improvement is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. Substantial improvements include:
 - a. Any repair, reconstruction, or improvement of a structure, the cost of which exceeds 50% of the market value of the structure as established by the County appraiser or a licensed professional appraiser.
 - b. Reconstruction or repair of a structure that exceeds 50% of the market value of the building before it was damaged.
 - c. Additions to an existing structure when the addition increases the market value of the structure by more than 50% or the floor area by more than 20%.
 - d. The term does not include the following:
 - i. Any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions; or
 - ii. Any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.
 5. Accessory structures may either be elevated or meet these standards:
 - a. Be equipped with adequate flood vents;

- b. Be constructed of flood resistant materials;
 - c. Utilities and mechanicals, if used, comply with section M of this Section.
 - d. Be anchored.
 6. Comply with other standards of this section, as applicable.
- I. Manufactured Homes within the Special Flood Hazard Area.
 1. All manufactured homes to be placed or substantially improved on sites that are outside of a manufactured home park or subdivision; in a new manufactured home park or subdivision; in an expansion to an existing manufactured home park or subdivision, or in an existing manufactured home park or subdivision on which a manufactured home has incurred “substantial damage” as the result of a flood shall be elevated on a permanent foundation such that the finished floor of the manufactured home is elevated to a minimum 18 inches (46 cm) above the base flood elevation and be securely anchored to an adequately designed foundation system to resist flotation, collapse, and lateral movement.
 2. Manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within the Special Flood Hazard Area on the community’s FIRM that are not subject to the above manufactured home provisions shall be elevated so that either:
 - a. The finished floor of the manufactured home is elevated to a minimum of 18 inches (46 cm) above the base flood elevation; or
 - b. The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and be securely anchored to an adequately designed foundation system to resist flotation, collapse, and lateral movement.
 3. Comply with the other standards of this Section as applicable.
- J. Recreational Vehicles (RV) within the Special Flood Hazard Area, whether in a park or on private property outside of a park, are subject to the following standards:

1. The RV is built on a single chassis.
 2. The RV is 400 square feet or less in area when measured at the largest horizontal projection.
 3. The RV is self-propelled or permanently towable by a light duty truck.
 4. The RV is designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.
 5. The RV is fully licensed and ready for highway use (street legal), on its wheels or jacking system, and attached to the site only by quick disconnect type utilities (water, electricity, sewer) and security devices, and having no permanent attached additions.
 6. The occupancy of the RV site is for fewer than 180 consecutive days.
 7. The RV “pads” shall be paved with asphaltic concrete or comparable, and have a special water quality facility for the collection of the stormwater from the site.
 8. The RV “pads” shall be wide enough to accommodate a trailer parked next to the towing vehicle or be long enough to accommodate both towing vehicle and trailer.
 9. National Flood Insurance Program regulations (reference Code of Federal Regulations (CFR) 60.3(c)(14)(iii)) require that if a recreational vehicle does not meet the criteria of this subsection, then the vehicle must “meet the elevation and anchoring requirements for manufactured homes” pursuant to subsection (I) of this section.
- K. Nonresidential Construction. New construction and substantial improvement of any commercial, industrial, or other nonresidential structure shall have the lowest floor, including basement, elevated to no less than one foot above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:
1. Be dry floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water. A dry floodproofing certificate shall be filed with the City following the form and procedure established by the Federal Emergency Management Agency.

2. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy, in accordance with standards established by the Federal Emergency Management Agency and the National Flood Insurance Program.
 3. 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 National Flood Insurance Program regulations (CFR 60.3(c)(4) and (5)) based on their development and/or review of the structural design, specifications, and plans. Such certifications shall be provided to the City.
 4. Nonresidential structures that are elevated, not dry floodproofed, must meet the same standards for space below the lowest floor as described in subsection (H)(2) of this section. If elevated, an Elevation Certificate shall be submitted with the construction plans, prior to pouring the foundation, and after construction, unless there is a LOMA for the site or it is very clear on the plan view that the area is outside of the Special Flood Hazard area and above the Base Flood Elevation.
 5. Applicants dry floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g., a building floodproofed to the base flood elevation will be rated as one foot below).
 6. Comply with other standards of this Section as applicable.
- L. Remove temporary fills. Temporary fills permitted during construction or emergency bank stabilization shall be removed if not in compliance with the balanced cut and fill standard of this code or prior to issuance of a Certificate of Occupancy or release of any bond issued for the development.
- M. Preserve and/or restore the vegetation corridor within the disturbed areas, and retain the existing tree canopy as established in sections 4.316, Width of Vegetation Corridor, and 4.317, Methods for Determining Vegetation Corridors Next to Primary Protected Water Features, of this chapter. An enhancement plan for disturbed areas shall be prepared and implemented to stabilize slopes to prevent landslides on slopes and sedimentation of water features. This plan shall provide for the replanting and maintenance of approved plant species designed to achieve pre-disturbance conditions.

- N. Maintain or reduce stream temperatures.
- O. Minimize erosive velocities, nutrient, and pollutant loading into water. Use filtering, infiltration, and natural water purification for stormwater runoff in compliance with the Erosion Control and Water Quality Standards of chapter 5.600 of this code. The applicant's engineering plans shall certify that runoff and sedimentation from the site will comply with the standards of chapter 5.600, Erosion Control and Water Quality Standards, of this code.
- P. Anchoring. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.
- Q. Construction Materials and Methods. All new construction and substantial improvements shall use flood-resistant materials in accordance with the requirements of FEMA Technical Bulletin 2-93 "Flood Resistant Materials Requirements" and utilities shall be designed and installed in accordance with FEMA Publication 348 "Protecting Building Utilities from Flood Damage." The following standards are only a summary of those requirements:
 - 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.
 - 3. 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.
 - 4. No construction materials or methods may be used within the floodplain that would impair or damage water quality or native vegetation.
 - 5. All development shall have adequate drainage provided to reduce exposure to flood damage and maintain water quality.
- R. Utilities and Roads.
 - 1. Stream crossings shall be as close to perpendicular to the stream as practicable. Bridges shall be used instead of culverts wherever practicable,

- and comply with the Oregon Department of Fish and Wildlife construction standards.
2. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
 3. 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.
 4. Onsite 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.
 5. Utility and road placement shall occur outside the floodway unless the utility or road is necessary to serve permitted development; and there is no reasonable alternative.
 6. Stormwater management and water quality facilities shall comply with the siting and construction standards of chapter 5.800, Stormwater Management, of this code.
- S. For any alterations or relocations of a watercourse, the floodplain or floodway, the developer shall obtain the required authorization and permits from the Oregon Department of Land Conservation and Development, Oregon Division of State Lands, U.S. Army Corps of Engineers, Oregon Department of Fish and Wildlife Service, Federal Emergency Management Agency, and other affected agencies, as applicable. The flood carrying capacity of the altered or relocated watercourse shall not be diminished and shall be maintained. Alterations will require a “No-Rise” certification for changes to the floodway, and changes that relocate the floodplain will require a Letter of Map Revision-Fill (LOMR-F) from FEMA or may require a revised Flood Insurance Study and Flood Insurance Rate Map for the City. The burden for all engineering studies required to process these forms is the applicant’s, not the City’s.
- T. Subdivision Proposals. In addition to compliance with the underlying zoning district standards of this code and this chapter, the construction of the subdivision shall be subject to the following additional criteria:
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 flood damage.
 3. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.
 4. Where the base flood elevation data has not been provided or is not available from another authoritative source for Zone A, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or five acres, whichever is less.
 - a. BFE data is not required when the actual building envelopes are clearly outside of Zone A or are on naturally higher ground (not created by fill) that is above the grade of Zone A by five feet or more.
 - b. BFE data is required when the building envelope outside of Zone A is elevated above Zone A by a five foot or less change in grade of the natural ground elevation (not created by fill).
 5. If more than 50% of the lot being partitioned or subdivided is affected by the floodplain, then the minimum density standard of this code does not apply.
- U. Critical Facilities. A critical facility means a facility for which even a slight chance of flooding might be too great. Critical facilities include, but are not limited to schools, nursing homes, congregate care facilities, clinics and/or hospitals, police, fire and emergency response installations, water pollution control facilities, and installations which produce, use, or store hazardous materials or hazardous waste.
1. Construction of new critical facilities shall be, to the extent possible, located outside the limits of the Special Flood Hazard Area (SFHA) (100-year floodplain).
 2. Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available.
 3. 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. Submit Elevation Certificates with the construction plans, prior to pouring the foundation, and upon completion of the structure in accordance with subsections G1(a), (b), and (c) of this Section.

4. Access to and from the critical facility should also be protected to the height utilized above.
5. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the extent possible.
6. Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.
7. Comply with the other standards of this section as applicable.

4.618 Flood Management Area Variance Procedures. Variances from dimensional standards of the underlying zoning district or other provisions of this code not part of this chapter shall be processed in accordance with chapter 6.200, Variance, of this code.

- A. The Director may grant an administrative variance of up to 50% of any dimensional standard in the underlying zoning district where necessary to avoid construction within the Flood Management Area.
- B. The Planning Commission shall hear and decide requests for variances from the dimensional standards of this chapter and the maximum impervious surface area in accordance with the City's participation in the National Flood Insurance Program.
- C. Variances shall only be issued upon consideration of the purpose of this chapter. The Planning Commission may attach such conditions to the granting of variances as it deems necessary to further the purpose of this chapter.
- D. As a participant in the National Flood Insurance Program, the City is not authorized to grant a variance from the requirement to elevate or floodproof structures in accordance with state and federal regulations, whichever is most restrictive.
- E. The City cannot grant a variance from the special flood hazard designation assigned by the Federal Emergency Management Agency to a site. However, a property owner may request a Letter of Map Amendment (LOMA), a Letter of

Map Revision (LOMR), or a Letter of Map Change (LOMC) from the Federal Emergency Management Agency.

- F. In approving variance applications, the Planning Commission shall consider all technical evaluations, relevant factors, and standards specified in other sections of this chapter and other chapters of this code, and make affirmative findings, with or without conditions, for each of the following criteria:
1. A showing of good and sufficient cause that the need for the variance is not of the applicant's making and will not result in a use of the site that is not otherwise permitted in the underlying zoning district.
 2. A determination that failure to grant the variance would result in exceptional hardship to the applicant and is the minimum necessary to grant relief. The test being that there is no possible relief from the current tax rate on an undeveloped lot currently being zoned for the denied use, and that the owner has attempted to sell the property within the past six months to conservation agencies or the City for the taxable value of the property, as determined by the Multnomah County Tax Assessor's Office.
 3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on, or victimization of, the public, or conflict with existing local laws and ordinances.
 4. The safety of access to the property in times of flood for ordinary and emergency vehicles.

4.619 Prescribed Conditions for the Rehabilitation or Replacement of Pre-Existing Structures. The replacement of pre-existing structures or development that is damaged or destroyed accidentally is not subject to the limitations and standards of section 5.345, Reconstruction of a Damaged Nonconforming Structure or Development, and/or section 5.350, Destruction of a Nonconforming Structure or Development, of this code, provided the following standards are met:

- A. The structure or development was in existence within the Flood Management Area prior to November 24, 2000.
- B. The use is allowed in the underlying zoning district at the time the application is made to rehabilitate or replace the structure.

- C. A Type I Flood Hazard Permit is approved prior to applying for building permits.
- D. The rehabilitation or replacement is rebuilt on the same footprint of the original structure and does not increase the impervious area within the 100-year floodplain.
- E. The rehabilitated or replaced structure is elevated, if residential, or floodproofed or elevated, if non-residential, in accordance with the applicable standards of this chapter.