

Director's Report and Recommendation Permanent Floodplain Development Regulations Amendments

July 8, 2021

Policy Background and Directives

Seattle's floodplain regulations have been in place for several decades and vary by specific flood zone designations and the type of development proposed. Generally, the regulations require raising the first floor of a new building above the anticipated flood levels and require buildings to be engineered to withstand storm winds and excessive flooding.

In February of 2020, the Federal Emergency Management Agency (FEMA) required Seattle to update our floodplain regulations to include FEMA's new Flood Insurance Rate Maps (FIRM) and the Flood Insurance Study (FIS). FEMA's adoption of the new map and study also included an audit of Seattle's floodplain regulations. Through the audit, FEMA identified several places in Seattle's code that needed to be amended in order to comply with the minimum standards in the Code of Federal Regulations (CFR) and to meet the state standards in RCW 86.16 and WAC 173-158. FEMA included the following required amendments in their audit: new definitions and updates to existing definitions to meet minimum standards; updates to the regulatory floodway development standards; and the inclusion of newly mapped coastal high hazard flood zone (VE zone) and required regulations for this zone.

FEMA's maps identify properties that are at risk of flooding and are used to determine which properties are required to have flood insurance. Citywide, there are approximately 2,000 properties located in floodplains. The new FEMA maps include 185 new parcels, about half of which are industrial properties along the Duwamish Waterway and River, which was not previously mapped by FEMA. See map in Appendix A for the locations of the FEMA mapped floodplains and a comparison of the 1995 maps to the 2020 maps.

In order to meet FEMA's requirements, City Council adopted interim Floodplain Development Regulations on July 20, 2020 as [Ordinance 126113](#) and on January 19, 2021 extended the interim regulations through February 2022 as [Ordinance 119978](#) to provide additional time for SDCI to develop permanent regulations. Seattle is required to have permanent Floodplain Development regulations prior to the expiration of the interim regulations. Without permanent regulations, property owners in floodplains may not be able to purchase new flood insurance or renew an existing policy.

This Director's Report describes the full range of regulatory changes that have already occurred in the interim Floodplain Development Regulations adopted in July 2020 and the additional regulatory changes that are proposed to be included in the permanent Floodplain Development Regulations. The additional changes proposed for the permanent regulations are listed in Table 1 and include SDCI's proposal to increase the elevation for construction to 3-ft above base flood elevation to account for sea level rise and new sections that include standards for the storage of materials and equipment, and standards for accessory structures.

Purpose National Flood Insurance Program and Roles of Federal, State, and Local Government

The purpose of the National Flood Insurance Program (NFIP) is to

- Reduce the emphasis on flood control
- Increase emphasis on floodplain management
- Reduce Federal disaster costs
- Shift burden from general taxpayers to floodplain occupants
- Provide insurance coverage not generally available on the private market
- Promote sound floodplain management practice

A local jurisdiction can participate in the NFIP if they adopt and enforce a floodplain management ordinance that meets or exceeds federal standards in 44 CFR 60.3 and complies with the state standards in RCW 86.16 and WAC 173-158. Continued eligibility in the program is based on maintaining compliance, which is based on enforcement of the provisions of the Floodplain management ordinance.

The federal government through the Federal Emergency Management Agency (FEMA) identifies and maps areas at risk of flooding, establishes development standards, and oversee implementation of NFIP. Additionally, the federal government provides affordable insurance coverage and provides disaster response and recovery.

The state through the Department of Ecology (Ecology) is contracted by FEMA to help document floodplain management activities and establish state development codes. Ecology also provides technical assistance, provides disaster and mitigation assistance; and manages the hazard mitigation grant programs.

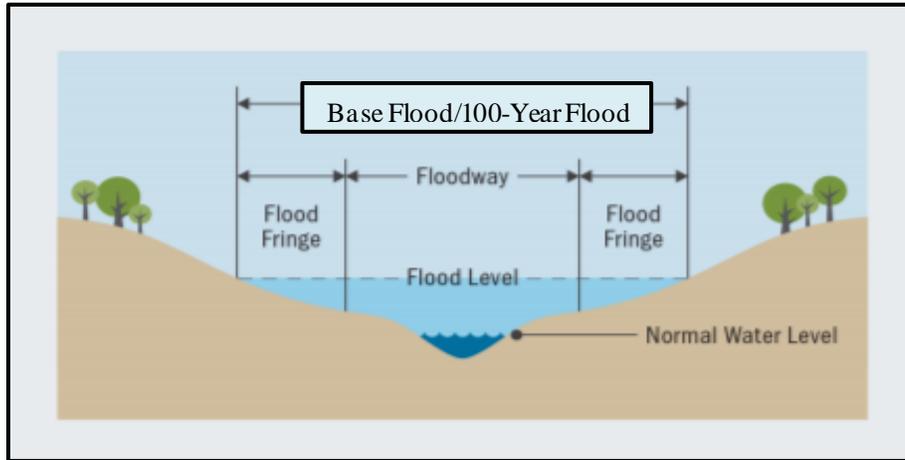
The local government through Seattle Department of Construction and Inspections (SDCI) is responsible for developing and implementing floodplain regulations including the review of permit applications and determining compliance of the regulations through issuing or denying permits. Additionally, SDCI is required to conduct inspections, take enforcement actions for noncompliance, coordinate map appeals and revisions, maintain floodplain maps and flood data, and disseminate floodplain management information.

What are special flood hazard areas and flood-prone environmentally critical areas?

Flood hazard areas identified on the Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. FEMA uses letters and numbers to indicate the type of flood hazard. See Appendix B for definitions of FEMA's flood zone designations and see Figure 1 below for an illustration of the different components of SFHAs.

SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1 -A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1 -A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30.

Figure 1. Components of a Special Flood Hazard Area.



Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood.

The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded).

Additionally, in 1990 the Washington State Legislature passed the Growth Management Act (GMA) requiring local governments to manage growth by designating urban growth areas, preparing comprehensive plans, and adopting development regulations, including regulations to protect environmentally critical areas (ECA). One of these defined critical areas is frequently flooded areas also known as flood-prone areas. Flood-prone areas are required to be identified and have the minimum standards that FEMA requires for special flood hazard areas. These flood-prone areas can include sea-level rise, impacts of tsunamis, wave-run up, surface run-off, and future flow conditions. Seattle's flood-prone areas include the FEMA mapped areas and areas identified by Seattle Public Utilities as having a risk flooding based on known flooding in these identified areas.

In general, the Floodplain Development Regulations apply to any development carried out on a public or private parcel containing a FEMA floodplain or ECA flood-prone area. As defined in Section 25.06.020, "development" means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage equipment or materials.

Summary of public participation

To date the public outreach conducted by SDCI includes the following:

- Established a floodplain development update website that includes information from FEMA with the required changes
- Mailed post cards to property owners located in the FEMA mapped floodplain (2,400 mailed)
- Provided ongoing updates to 800 subscribers to e-mail list
- Held meetings with Port of Seattle and industrial/maritime property owners
- Responded to e-mail questions regarding the updates to the regulations
- Held an on-line public meeting on April 27, 2021, video posted on the website

Analysis

Local FEMA officials completed an audit of Seattle’s floodplain regulations and issued a report in the form of a table (see Appendix C) that directed the minimum updates for Seattle’s Floodplain Development Regulations in order for Seattle to remain in compliance with the NFIP. FEMA’s table also included recommended changes and optional provisions for Seattle’s Floodplain Development Regulations. For the interim Floodplain Development Regulations, Seattle made all the required changes, some of FEMA’s recommended changes, and changes to clarify the regulations and to align with the building and residential codes. For the permanent regulations, Seattle is proposing to include all the changes made in the interim regulations and FEMA’s additional optional and recommended changes. Additionally, for the permanent regulations Seattle is proposing a higher standard than FEMA for the elevation of structures above the base flood elevation to better account for sea level rise. Below are SDCI summary tables indicating the proposed changes with information regarding the reason for the proposed change and indicating whether the proposal was included in the interim regulations or is a new proposal for the permanent regulations.

Table 1 lists the proposed changes included in the permanent floodplain regulations. These changes include FEMA’s recommended and optional provisions and SDCI’s proposal to increase the elevation for development in order to accommodate the anticipated rise in sea level.

Table 1. New Amendments Proposed for the Permanent Floodplain Development Regulations SMC Chapter 25.06
Amendments to address sea level rise – proposed by SDCI
Increase the required elevation of new construction and substantially improved structures in flood risk areas. The FEMA standards require new or substantially improved buildings to be raised 1 or 2 feet above the base flood elevation, the expected water level during a 100-year flood event, depending on if the structure is non-residential or residential. Historically, Seattle has had slightly higher standards than FEMA, requiring all new buildings and substantially improved structures to be elevated 2 feet. SDCI recommends increasing the elevation for all new or substantially improved buildings to 3 feet above the base flood elevation, to better account for sea level rise. This same higher standard is included in King County’s new floodplain regulations, which apply to the area along the Duwamish River just south of Seattle.

Amendments – suggested or optional FEMA provisions
<p>Suggested additions Statutory authorization Findings of fact Methods of reducing flood losses Storage of materials and equipment Accessory (Appurtenant) Structures</p> <p>Optional addition General requirements for other development</p>
<p>Optional addition - Allow flexibility for residential buildings in the floodway to be replaced in very limited instances, with review and approval from the Department of Ecology. SDCI has identified just two residential buildings in the floodway, the area with the very highest flood risk. Currently SDCI only allows repair and maintenance of these structures. This change would allow the homeowner to get a permit from SDCI to replace or expand the structure only if Ecology reviewed the application and determined the replacement to be safe. This standard is also included in King County’s new floodplain regulations.</p>

Tables 2 and 3 include the changes that were adopted as interim regulations and are included in the permanent regulations. Table 2 lists the amendments that are required by FEMA and the Code of Federal Regulations (CFR). Table 3 lists the amendments that are recommended by FEMA or by SDCI staff for clarity and to better align with the building and residential codes.

Table 2. Required by FEMA and Code of Federal Regulations (CFR) SMC Chapter 25.06
Section 25.06.030 New definitions - required by 44 CFR 59.1
<p>The following are highlights of the definitions that were added. See the proposed permanent regulations for the full content.</p> <p>Basement: Any area of the building having its floor sub-grade (below ground level) on all sides.</p> <p>Coastal high hazard area: An area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The area is designated on the FIRM as zone V1-30, VE or V.</p> <p>Flood elevation study: An examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards. Also known as a Flood Insurance Study (FIS).</p> <p>Floodplain or flood-prone area: Any land area susceptible to being inundated by water from any source. See "Flood or flooding."</p> <p>Floodplain administrator: The community official designated by title to administer and enforce the floodplain management regulations.</p> <p>Floodplain variance: A grant of relief by a community from the terms of a floodplain management regulation.</p>

Flood proofing: Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate risk of flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents. Flood proofed structures are those that have the structural integrity and design to be impervious to floodwater below the Base Flood Elevation.

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

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

Historic structure: Any structure that is:

- 1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- 2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- 3) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of Interior; or
- 4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
 - a) By an approved state program as determined by the Secretary of the Interior, or
 - b) Directly by the Secretary of the Interior in states without approved programs.

Mean sea level: For purposes of the National Flood Insurance Program, the vertical datum to which Base Flood Elevations shown on a community's Flood Insurance Rate Map are referenced.

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

Section 25.06.030 Amended definitions - required by 44 CFR 59.1

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

Area of special flood hazard: The land in the floodplain within a community subject to a 1 percent or greater chance of flooding in any given year. It is shown on the Flood Insurance Rate Map (FIRM) as zone A, AO, AH, A1-30, AE, A99, AR (V, VO, V1-30, VE). "Special flood hazard area" is synonymous in meaning with the phrase "area of special flood hazard".

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

Critical Facility: A facility for which even a slight chance of flooding might be too great.

Critical facilities include (but are not limited to) schools, nursing homes, hospitals, police, fire

and emergency response installations, and installations which produce, use, or store hazardous materials or hazardous waste.

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Flood or Flooding:

- 1) A general and temporary condition of partial or complete inundation of normally dry land areas from:
 - a) The overflow of inland or tidal waters.
 - b) The unusual and rapid accumulation or runoff of surface waters from any source.
 - c) Mudslides (i.e., mudflows) which are proximately caused by flooding as defined in paragraph (1)(b) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.
- 2) The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph (1)(a) of this definition.

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

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

New construction: For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after the effective date of an initial Flood Insurance Rate Map or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, "new construction" means structures for which the "start of construction" commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

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

structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

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

Substantial improvement: Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either:

- 1) Any project for improvement of a structure to correct previously identified existing violations of state or local health, sanitary, or safety code specifications that have been identified by the local code enforcement official and that are the minimum necessary to assure safe living conditions; or
- 2) Any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

New development standards - required by 44 CFR 60.3

25.06.044 Abrogation and greater restrictions

This Chapter 25.06 is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Chapter 25.06 and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

25.06.045 Interpretation

In the interpretation and application of this Chapter 25.06, all provisions shall be:

- A. Considered as minimum requirements;
- B. Liberally construed to provide the maximum flood protection; and
- C. Deemed neither to limit nor repeal any other powers granted under state statutes.

25.06.132 AE and A1-30 zones with base flood elevations but no floodways

In AE and A1-30 FIRM designated zones with identified base flood elevations but no identified floodways, new construction, substantial improvements, or other development (including fill) is prohibited unless the applicant can demonstrate 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 1 foot at any point within the community.

25.06.136 Floodplain variances

Includes the allowance and criteria for a variance from the floodplain regulations.

Note: This is an administrative decision by the Director similar to a Type I decision

Amended standards - required by 44 CFR 60.3

25.06.050 Identification of special flood hazard areas

Replaces the 1995 Flood Insurance Rate Map and Flood Insurance Study reference in 25.06. with the 2020 Flood Insurance Rate Map and Flood Insurance Study.

25.06.070 Application for floodplain development approval or license

Includes requirement for the new VE (coastal flood hazard areas).

<p>25.06.090 Functions of the administrators Clearly state the responsibilities of floodplain administrator functions including not allowing development in the floodway, requiring development is safe from flooding, notifying when annexations occur in special flood hazard areas and obtain and maintain records for floodplain development permits.</p>
<p>25.06.100 General standards Include examples of anchoring methods that can be used and clearly states that wells cannot be located in floodways.</p>
<p>25.06.110 Standards involving base flood elevations Clearly state the development standards for residential structures and for non-residential structures in all flood zones (AE, A, AO, and VE); Clearly state that the building code provisions for flood protection apply to residential and non-residential development; Include specific standards for garages constructed below the base flood elevation allowing automatic entry and exit of floodwaters; and Include provisions on what is allowed in enclosed areas below the lowest floor of structures Include standards for changes to the base flood elevation or boundaries to a special flood hazard area, Include livestock sanctuary areas.</p>
<p>Amend Floodplain Insurance Rate Maps (FIRM) and Flood Insurance Study (FIS) - required by FEMA’s adoption of new FIRM and FIS on August 19, 2020</p>
<p>Update current floodplain maps and flood insurance study that are based on FEMA’s 1995 maps and study with FEMA’s August 19, 2020, FIRM and FIS.</p>
<p>185 new parcels would be regulated with the majority of the new parcels near Harbor Island and the Duwamish River.</p>

<p>Table 3. Amendments Recommended by FEMA or SDCI SMC Chapter 25.06</p>
<p>New definitions to add to Section 25.06.030 for clarification as recommended by FEMA</p>
<p>ASCE 24: The most recently published version of ASCE 24, Flood Resistant Design and Construction, published by the American Society of Civil Engineers. Breakaway wall: A wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system. Community means any state, or area or political subdivision thereof, or any Indian tribe or authorized tribal organization or Alaska Native village or authorized native organization, that has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.</p>

Standards to amend for clarification recommended by SDCI
25.06.080 Designation of administrators Clearly state that the Directors' of SDCI and SDOT are the flood plain administrators.
25.06.120 Standards for floodways Clearly state that development in the floodway is extremely hazardous and that any improvement to existing structures is the minimum necessary to assure safe living conditions.
Amendment to align with Seattle Building and Residential Codes recommended by SDCI
25.06.140 Penalties for noncompliance Increase the civil penalty amount for violations from \$50/day to \$500/day.

Consistency with the Comprehensive Plans

The permanent Floodplain Development Regulations are consistent with Seattle’s Comprehensive Plan. Specifically with Land Use Goal 17, which includes the goal to “protect public health, safety, and welfare in areas subject to landslides, liquefaction, floods, or peat settlement, while permitting reasonable development;” and with Land Use Policy 17.25 “Regulate development in flood-prone areas in order to protect public health and safety, and aquatic habitat, and to prevent damage to private property caused by hazardous flooding conditions.”

Recommendations

FEMA requires jurisdictions to meet 44 CFR 60.3 and to update Flood Insurance Rate Maps and Flood Insurance Rate Studies. The proposed amendments meet these required changes and includes FEMA’s suggested changes and optional provisions and includes SDCI’s proposal for a higher construction elevation to account for sea level rise. SDCI engaged the public and stakeholders to inform them of FEMA’s requirements and to explain the proposal to increase the elevation requirement to better prepare for sea level rise.

The Director recommends adoption of the proposed amendments to comply with the National Flood Insurance Program so that Seattle remains in compliance with this program and so that property owners in the floodplain can acquire insurance and federally backed loans. Additionally, these regulations reflect sound floodplain management practices, which in turn provide life-safety protection and protection of the ecological functions of the floodplain that contribute to Seattle’s high quality of life.