

Massachusetts Model Floodplain Bylaws, DRAFT 2021 revision

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Section 1. Introduction

After years of devastation from flooding across the nation, Congress created the National Flood Insurance Act of 1968 in an attempt to offer flood disaster relief in the form of insurance. This insurance would be available to residents of communities that voluntarily adopt and enforce floodplain management ordinances that meet at least minimum National Flood Insurance Program (NFIP or the Program) requirements.

According to FEMA's Community Status Book, the first Massachusetts community to officially participate in the NFIP was the Town of Wareham, who joined the NFIP on May 28, 1971. Most other MA communities quickly followed suit in the 1970s and early 1980s. The State NFIP Coordinating Office was created by Executive Order of the Governor in 1978 and is housed under the Water Resources Commission in the Department of Conservation & Recreation's Flood Hazard Management Program.

This document has been prepared in order to assist NFIP communities in Massachusetts to understand the minimum requirements of the NFIP, and to assure that their local bylaws or ordinances contain the necessary and proper language for compliance with the Program.

The local floodplain overlay district is established as an overlay to all other districts. In Massachusetts, the floodplain overlay district bylaw or ordinance is part of a federal requirement for communities that choose to participate in the NFIP. However, the state already administers regulations that take care of many floodplain management requirements and concerns. Referencing existing regulations is important to ensure that projects have been reviewed under the appropriate state regulations and that variances to the conditions of the bylaw do not erroneously allow variances to state requirements.

All development in the floodplain overlay district, including structural and non-structural activities, whether permitted by right or by special permit must be in compliance with the following:

- 780 CMR- Massachusetts Statewide Building Code
- 310 CMR- Department of Environmental Protection Regulations

For those NFIP requirements that are not found in the above state regulations, the community must adopt these requirements in their bylaws (towns) or ordinances (cities.) The following section contains all NFIP requirements that must be adopted as local regulations, since they are not found in the above listed regulations.

Section 3 contains floodplain management definitions that FEMA Region I feels are critical for inclusion in local codes.

Section 4 of this document offers explanations to support local understanding of these requirements.

Section 2. Required Local Bylaws

For those National Flood Insurance Program minimum requirements that are not found in existing state law, the following articles must be adopted by the community as a part of their local bylaws or ordinances, if these are not already adopted. The suggested language in this section is compliant with the federal requirements.

1. Stated local purpose for flood resistant standards

The purpose of the Floodplain Overlay District is to:

- 1) Ensure public safety through reducing the threats to life and personal injury
- 2) Eliminate new hazards to emergency response officials
- 3) Prevent the occurrence of public emergencies resulting from water quality, contamination, and pollution due to flooding
- 4) Avoid the loss of utility services which if damaged by flooding would disrupt or shut down the utility network and impact regions of the community beyond the site of flooding
- 5) Eliminate costs associated with the response and cleanup of flooding conditions
- 6) Reduce damage to public and private property resulting from flooding waters

2. Use of FEMA maps and supporting studies

A community must select the appropriate option as follows:

A. Bylaw text for communities with “Community-Based” FIRMs, FBFM and FIS

The Floodplain District is herein established as an overlay district. The District includes all special flood hazard areas designated on the [Town or City]’s Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency for the administration of the National Flood Insurance Program, dated [effective map dates on FIRM] and on the Flood Boundary & Floodway Map (if applicable) dated [FBFM effective date.] These maps indicate the 1%-chance regulatory floodplain. The exact boundaries of the District shall be defined by the 1%-chance base flood elevations shown on the FIRM and further defined by the Flood Insurance Study (FIS) report dated [FIS date.] The effective FIRM, FBFM, and FIS report are incorporated herein by reference and are on file with the Town Clerk, Planning Board, Building Official, Conservation Commission and [other.]

OR

B. Bylaw text for communities with “Countywide” FIRMs and FIS

The Floodplain District is herein established as an overlay district. The District includes all special flood hazard areas within [Community Name] designated as Zone A, AE, AH, AO, A99, V, or VE on the [County Name] Flood Insurance Rate Map (FIRM) dated [FIRM date] issued by the Federal Emergency Management Agency (FEMA) for the administration of the National Flood Insurance Program. The exact boundaries of the District shall be defined by the 1%-chance base flood elevations shown on the FIRM and further defined by the [County Name] Flood Insurance Study (FIS) report dated [FIS date]. The FIRM and FIS report are incorporated herein by reference and are on file with the Town Clerk, Planning Board, Building Official, Conservation Commission and [other].

3. Designation of community Floodplain Administrator

The Town/City of _____ hereby designates the position of _____ to be the official floodplain administrator for the Town/City.

4. Permits are required for all proposed development in the Floodplain Overlay District

The Town/City of _____ requires a permit for all proposed construction or other development in the floodplain overlay district, including new construction or changes to existing buildings, placement of manufactured homes, placement of agricultural facilities, fences, sheds, storage facilities or drilling, mining, paving and any other development that might increase flooding or adversely impact flood risks to other properties.

5. Assure that all necessary permits are obtained

The town’s permit review process includes the requirement that the proponent obtain all local, state and federal permits that will be necessary in order to carry out the proposed development in the floodplain overlay district. The proponent must acquire all necessary permits, and must demonstrate that all necessary permits have been acquired.

6. Floodway encroachment

In Zones A, A1-30, and AE, along watercourses that have not had a regulatory floodway designated, the best available Federal, State, local, or other floodway data shall be used to prohibit encroachments in floodways which would result in any increase in flood levels within the community during the occurrence of the base flood discharge.

In Zones A1-30 and AE, along watercourses that have a regulatory floodway designated on the Town's/City's FIRM or Flood Boundary & Floodway Map (choose map which delineates floodways for your community) encroachments are prohibited, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

7. Unnumbered A Zones

In A Zones, in the absence of FEMA BFE data and floodway data, the building department will obtain, review and reasonably utilize base flood elevation and floodway data available from a Federal, State, or other source as criteria for requiring new construction, substantial improvements, or other development in Zone A and as the basis for elevating residential structures to or above base flood level, for floodproofing or elevating nonresidential structures to or above base flood level, and for prohibiting encroachments in floodways.

8. AO and AH zones drainage requirements *(if applicable in your community)*

Within Zones AO and AH on the FIRM, adequate drainage paths must be provided around structures on slopes, to guide floodwaters around and away from proposed structures.

9. Subdivision proposals

All subdivision proposals and development proposals in the floodplain overlay district shall be reviewed to assure that:

- (a) Such proposals minimize flood damage.

- (b) Public utilities and facilities are located & constructed so as to minimize flood damage.
- (c) Adequate drainage is provided.

10. Base flood elevation data for subdivision proposals

When proposing subdivisions or other developments greater than 50 lots or 5 acres (whichever is less), the proponent must provide technical data to determine base flood elevations for each developable parcel shown on the design plans.

11. Recreational vehicles

In **A**, A1-30, AH, AO, AE Zones, **V1-30, VE, and V Zones**, all recreational vehicles to be placed on a site must be elevated and anchored in accordance with the zone's regulations for foundation and elevation requirements or be on the site for less than 180 consecutive days or be fully licensed and highway ready.

[Note – include all zones applicable to your community]

12. Protection of dunes *(if applicable in your community)*

Alteration of sand dunes is prohibited when the alteration would increase potential flood damage.

13. Watercourse alterations or relocations in riverine areas

In a riverine situation, the _____ (appropriate official in community) shall notify the following of any alteration or relocation of a watercourse:

- Adjacent Communities, especially upstream and downstream
- Bordering States, if affected
- NFIP State Coordinator
Massachusetts Department of Conservation and Recreation
251 Causeway Street, 8th floor, Boston, MA 02114
- NFIP Program Specialist
Federal Emergency Management Agency, Region I
99 High Street, 6th Floor, Boston, MA 02110

14. Requirement to submit new technical data

If the Town/City acquires data that changes the base flood elevation in the FEMA mapped Special Flood Hazard Areas, the Town/City will, within 6 months, notify FEMA of these changes by submitting the technical or scientific data that supports the change(s.) Notification shall be submitted to:

- NFIP State Coordinator
Massachusetts Department of Conservation and Recreation
~~251 Causeway Street, 8th floor, Boston, MA 02114~~
- NFIP Program Specialist
Federal Emergency Management Agency, Region I
~~99 High Street, 6th Floor, Boston, MA 02110~~

15. Variances to building code floodplain standards

CHOOSE THE APPROPRIATE OPTION:

A. If the State issues variances to the flood-resistant standards as found in the state building code, the community will use this text for local adoption:

The Town/City will request from the State Building Code Appeals Board a written and/or audible copy of the portion of the hearing related to the variance, and will maintain this record in the community's files.

The Town/City shall also issue a letter to the property owner regarding potential impacts to the annual premiums for the flood insurance policy covering that property, in writing over the signature of a community official that (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (ii) such construction below the base flood level increases risks to life and property.

Such notification shall be maintained with the record of all variance actions for the referenced development in the floodplain overlay district.

B. Certain communities have the authority to issue variances to the state building code. If your community has this authority from the BBRS, you will use this text for local adoption:

Variances to floodplain development regulations shall only be issued upon (i) a showing of good and sufficient cause, (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public

expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

A written justification for the variance will be maintained in the Town's/City's building permit files, delineating the technical reason for the variance, and stating that the variance is the minimum necessary (considering the flood hazard) to afford relief.

The Town/City shall also issue a letter to the property owner regarding potential impacts to the annual premiums for the flood insurance policy covering that property, in writing over the signature of a community official that (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (ii) such construction below the base flood level increases risks to life and property.

Such notification shall be maintained with the record of all variance actions for the referenced development in the floodplain overlay district.

[16. Variances to local Zoning Bylaws related to community compliance with the National Flood Insurance Program \(NFIP\)](#)

A variance from these floodplain bylaws must meet the requirements set out by State law, and may only be granted if: 1) Good and sufficient cause and exceptional non-financial hardship exist; 2) the variance will not result in additional threats to public safety, extraordinary public expense, or fraud or victimization of the public; and 3) the variance is the minimum action necessary to afford relief.

[17. Abrogation and greater restriction section](#)

The floodplain management regulations found in this Floodplain Overlay District section shall take precedence over any less restrictive conflicting local laws, ordinances or codes.

[18. Disclaimer of liability](#)

The degree of flood protection required by this bylaw [ordinance] is considered reasonable but does not imply total flood protection.

19. Severability section

If any section, provision or portion of this bylaw [ordinance] is deemed to be unconstitutional or invalid by a court, the remainder of the ordinance shall be effective.

20. Local Enforcement

This is not sample bylaw text, but rather an instruction:

Please read the explanation in Section 4 about the importance of being able to point to specific local enforcement procedures for non-compliant floodplain development.

Section 3. Definitions not found in the State Building Code

National Flood Insurance Program (NFIP) definitions are found in Title 44 of the Code of Federal Regulations, section 59.1. The definitions below refer to their source; if the definition is from the MA building code, it is from the 9th Edition, which meets the minimum standards of the NFIP.

In order for the bylaw or ordinance to be clearly understood, it is necessary to define technical terms or key words. An understanding of these terms is a prerequisite to effective administration of the floodplain management bylaw or ordinance.

Per FEMA Region I, these additional definitions must be included in local bylaws or ordinances.

DEVELOPMENT means any man-made change to improved or unimproved real estate, including but not limited to building or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials. [US Code of Federal Regulations, Title 44, Part 59]

FLOOD BOUNDARY AND FLOODWAY MAP means an official map of a community issued by FEMA that depicts, based on detailed analyses, the boundaries of the 100-year and 500-year floods and the 100-year floodway. (For maps done in 1987 and later, the floodway designation is included on the FIRM.) *(if applicable in your community)*

FLOOD HAZARD BOUNDARY MAP (FHBM.) An official map of a community issued by the Federal Insurance Administrator, where the boundaries of the flood and related erosion areas having special hazards have been designated as Zone A or E. [US Code of Federal Regulations, Title 44, Part 59] *(if applicable in your community)*

FLOODWAY. The channel of the river, creek 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. [Base Code, Chapter 2, Section 202]

FUNCTIONALLY DEPENDENT USE means 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, but does not include long-term storage or related manufacturing facilities. [US Code of Federal Regulations, Title 44, Part 59] Also [Referenced Standard ASCE 24-14]

HIGHEST ADJACENT GRADE means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure. [US Code of Federal Regulations, Title 44, Part 59]

HISTORIC STRUCTURE means any structure that is:

- (a) 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;
- (b) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- (c) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
- (d) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

- (1) By an approved state program as determined by the Secretary of the Interior or
 - (2) Directly by the Secretary of the Interior in states without approved programs.

[US Code of Federal Regulations, Title 44, Part 59]

NEW CONSTRUCTION. Structures for which the start of construction commenced on or after the effective date of the first floodplain management code, regulation, ordinance, or standard adopted by the authority having jurisdiction, including any subsequent improvements to such structures. *New construction includes work determined to be substantial improvement.* [Referenced Standard ASCE 24-14]

RECREATIONAL VEHICLE means a vehicle which is:

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

[US Code of Federal Regulations, Title 44, Part 59]

REGULATORY FLOODWAY - see FLOODWAY.

SPECIAL FLOOD HAZARD AREA. The land area subject to flood hazards and shown on a Flood Insurance Rate Map or other flood hazard map as Zone A, AE, A1-30, A99, AR, AO, AH, **V, VO, VE or V1-30**. [Base Code, Chapter 2, Section 202]

START OF CONSTRUCTION. The date of issuance for new construction and substantial improvements to existing structures, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement is within 180 days after the date of issuance. The actual start of construction means the first placement of permanent construction of a building (including a manufactured home) on a site, such as the pouring of a slab or footings, installation of pilings or construction of columns.

Permanent construction does not include land preparation (such as clearing, excavation, grading or filling), the installation of streets or walkways, excavation for a basement, footings, piers or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main building. 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. [Base Code, Chapter 2, Section 202]

STRUCTURE means, 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. [US Code of Federal Regulations, Title 44, Part 59]

SUBSTANTIAL REPAIR OF A FOUNDATION. When work to repair or replace a foundation results in the repair or replacement of a portion of the foundation with a perimeter along the base of the foundation that equals or exceeds 50% of the perimeter of the base of the foundation measured in linear feet, or repair or replacement of 50% of the piles, columns or piers of a pile, column or pier supported foundation, the building official shall determine it to be substantial repair of a foundation. Applications determined by the building official to constitute substantial repair of a foundation shall require all existing portions of the entire building or structure to meet the requirements of 780 CMR. [As amended by MA in 9th Edition BC]

VARIANCE means a grant of relief by a community from the terms of a flood plain management regulation. [US Code of Federal Regulations, Title 44, Part 59]

VIOLATION means the failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in §60.3 is presumed to be in violation until such time as that documentation is provided. [US Code of Federal Regulations, Title 44, Part 59]

ZNES, FLOOD – *These definitions do not need to be included in local bylaws.*

Definitions of Flood Zones

The community shall use the pertinent definitions for flood zones delineated within the community. All of these terms are defined in the US Code of Federal Regulations, Title 44, Part 64.3.

ZONE A means an area of special flood hazard without water surface elevations determined

ZONE A1-30 and ZONE AE means area of special flood hazard with water surface elevations determined

ZONE AH means areas of special flood hazards having shallow water depths and/or unpredictable flow paths between (1) and (3) feet, and with water surface elevations determined

ZONE AO means area of special flood hazards having shallow water depths and/or unpredictable flow paths between (1) and (3) ft. *(Velocity flow may be evident; such flooding is characterized by ponding or sheet flow.)*

ZONE A99 means area of special flood hazard where enough progress has been made on a protective system, such as dikes, dams, and levees, to consider it complete for insurance rating purposes. (Flood elevations may not be determined.)

ZNES B, C, AND X means areas of minimal or moderate flood hazards or areas of future-conditions flood hazard. *(Zone X replaces Zones B and C on new and revised maps.)*

ZONE V means area of special flood hazards without water surface elevations determined, and with velocity, that is inundated by tidal floods (coastal high hazard area)

ZONE V1-30 and ZONE VE *(for new and revised maps)* means area of special flood hazards, with water surface elevations determined and with velocity, that is inundated by tidal floods (coastal high hazard area)

Section 4. Explanations

The requirements of the NFIP can be found in the US Code of Federal Regulations, Title 44 Emergency Management, generally in sections 59 through 75, although the requirements that most specifically address development in the floodplain are found in section 60.3. The highlighted bold italic type below states the requirement as found in the federal code and is followed by the code citation.

1. Stated local purpose for flood resistant standards

To justify the community's reasoning behind local floodplain overlay district zoning bylaws, the NFIP requires:

A purpose section citing health, safety, and welfare reasons for adoption [44 CFR 59.22(a)(1)]

The statement of purpose should set forth the goals and objectives to be achieved through the bylaw or ordinance. In other words, the statement of purpose enumerates what the community intends to accomplish by enacting regulations. The underlying purpose of the floodplain management regulations is to protect the public health, safety, and general welfare and to minimize the harmful impacts of flooding upon the community

These stated purposes will be ever more critical as community liabilities increase due to climate changes and increased flooding/ flood damages. The community is responsible to assure that all development is implemented in a safe, healthy, and socially/economically acceptable manner.

2. Use of FEMA maps and supporting studies

For local adoption of current effective FEMA flood maps and Flood Insurance Studies (FIS), the NFIP requirements state:

Adopt or reference correct Flood Insurance Rate Map (and where applicable, Flood Boundary Floodway Map) and date. [44CFR 60.2(h)]

and

Adopt or reference correct Flood Insurance Study and date. [44CFR 60.2(h)]

FEMA guidance (publication #495) states:

“The basis of your community’s floodplain management regulations is the flood hazard data FEMA provides. In support of the NFIP, FEMA identifies flood hazards nationwide and publishes and periodically updates flood hazard data. These data are provided to communities in the form of a Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) report...”

and “Each time FEMA provides your community with new or revised flood hazard data, you must either adopt new floodplain management regulations to incorporate the data into your ordinance or amend the existing ones to reference the new FIRM and FIS report.”

Communities that fail to enact the necessary floodplain management regulations will be suspended from participation in the NFIP and subject to the prohibitions contained in Section 202(a) of the 1973 Act as amended. (Text from actual FEMA Letter of Final Determination.)

3. Designation of community Floodplain Administrator

Designate the official responsible to submit a report to the Federal Insurance Administrator concerning the community participation in the Program, including, but not limited to the development and implementation of floodplain management regulations. [44CFR 59.22 (b)]

The community must designate by title one person to act as the community’s floodplain administrator (sometimes referred to as the FPA.). This is so that FEMA can use this information in their local contacts database, and so that this person can act on behalf of the community when implementing certain tasks under the National Flood Insurance Program. For example, the local FPA would sign the Community Acknowledgement Form when a property owner wishes to file for a Letter of Map Revision (LOMR).

The designation refers to a local staff position and can be anyone with the local authority to assure that the community is meeting its obligations as a participant in the National Flood Insurance Program. The FPA does not need to be someone who is directly involved in local development, but it should be someone who has at least a general concept of NFIP requirements and of the community’s obligations under the Program. Typically, across the nation the FPA can be a building commissioner, town manager, town engineer, director of planning, environmental planner, etc.

Typical duties of an FPA include but are not limited to:

- a) Understanding the regulations for development in the floodplain overlay district
- b) Ensuring that permits are applied for when development of any kind is proposed in the floodplain overlay district

- c) Involvement with the permit process and/or permit application review for development in the floodplain overlay district
- d) Coordinating with other local departments such as public works, stormwater/engineering, planning & zoning, conservation commission, or housing
- e) Notifying adjacent communities prior to alteration of a watercourse
- f) Dealing with compliance issues and enforcement actions such as correcting violations, or working with the appropriate local staff to correct violations
- g) Maintaining records of floodplain development, and keeping FEMA current and historic maps available for public inspection

4. Permits are required for all proposed development in the Floodplain Overlay District

Require permits for all proposed construction and other developments including the placement of manufactured homes [44CFR 60.3(b)(1)]

NFIP requirements are focused on “development” in the floodplain. The NFIP definition of development is *“any manmade change to improved or unimproved real estate, including but not limited to building or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.”* [44CFR 59.1]

Most Massachusetts communities have long used building permits to review construction in their floodplain overlay district, and conservation commissions use several documents for review of other types of development, but the regulation of all development in a floodplain is essential so that flood risks are not increased either on the site or to adjacent or upstream/downstream properties.

Some communities use a ‘Floodplain Development Review Form’ in addition to the traditional building permit, so they can document the review of all activities in the floodplain such as filling and grading; excavation, mining and drilling, storage of materials or equipment, placement of recreational vehicles or temporary stream crossings, and the review of activities conducted by other agencies such as roads or bridges built by state or federal government.

In Massachusetts, the local conservation commission reviews many of the above-listed activities, but use of a floodplain development review form for all floodplain overlay district proposals ensures that nothing slips through the cracks. This NFIP permitting requirement is not prescriptive, but the documentation of some kind of permit or review process is mandatory for all floodplain development.

An additional benefit of documenting all floodplain development is that when a violation is discovered, the community can demonstrate that they did not approve the development as constructed, or that the developer did not come in for a full review of the development activity.

5. Assure that all necessary permits are obtained

Assure that all other State and Federal permits are obtained [44CFR 60.3(a)(2)]

While the community does not have to participate in the acquisition or review of all necessary state and federal permits for floodplain development, the community is obligated to assure that all necessary permits have been obtained by the proponent. The use of a checklist facilitates awareness for the proponent of which other permits must be obtained, generally prior to beginning the development project.

6. Floodway encroachment

310 CMR 10.57(4) General Performance Standards.

(a) Bordering Land Subject to Flooding.

1. Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows.

Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Further, with respect to waterways, such compensatory volume shall be provided within the same reach of the river, stream or creek.

2. Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.

This standard is found in the Wetlands Protection Act (WPA), and essentially means that there is no rise allowed in the elevation of the base flood anywhere in the entire floodplain. While an official certification is not required in floodways that are not regulated (shown on the FEMA map), for the intent of the WPA to be fulfilled the community must be sure that there will be no rise in the base flood elevation. If the area is located in an unnumbered A zone, a BFE must be determined before the development is designed, so that the “no rise” standard can be demonstrated.

Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase

in flood levels within the community during the occurrence of the base flood discharge. [44CFR 60.3(b)(6)]

Under federal NFIP requirements, the community must require certification from a registered professional that shows there will be no rise in the base flood elevation when development takes place in the regulated floodway. This cannot be accomplished by showing compensatory alone; the documentation must include a hydrologic and hydraulic (H&H) analysis.

7. Unnumbered A Zones

In A Zones, in the absence of FEMA BFE data and floodway data, obtain, review and reasonably utilize base flood elevation and floodway data available from available from a Federal, State, or other source as criteria for requiring new construction, substantial improvements, or other development in Zone A as the basis for elevating residential structures to or above base flood level, for floodproofing or elevating nonresidential structures to or above base flood level, and for prohibiting encroachments in floodways. [44CFR 60.3(b)(4)]

If the community has the engineering resources required to determine the base flood elevation in an unnumbered A zone, these resources can be used to meet this requirement. For those communities that do not have these resources, and even in communities that do, the permitting office can require that the proponent pay for resources to determine the base flood elevation when a development is being proposed. Historical records can be used, as well as any other data that reasonably indicates the 1% chance flood event. Two notes about this requirement:

- a) FEMA does allow a “defacto” elevation of two (2) feet above the highest adjacent grade in cases where the BFE cannot be reasonably determined, but the 9th Edition of the Massachusetts building code requires an additional foot of freeboard. This means that the top of the lowest floor would have to be three (3) feet above the highest adjacent grade.
- b) The 9th Edition of the MA building code allows communities to use preliminary FEMA maps once the Letter of Final Determination has been issued. These maps may indicate a BFE where none existed before, by virtue of the map update process.

8. AO and AH zones drainage requirements

In Zones AO and AH, require drainage paths around structures on slopes to guide water away from structures. [44CFR 60.3(c)(11)]

Guiding water away from the structure must also consider adjacent properties, where drainage cannot impact those lots or structures.

9. Subdivision proposals

Review subdivision proposals and development proposals to assure that:

(a) Such proposals minimize flood damage.

(b) Public utilities and facilities are located & constructed so as to minimize flood damage.

(c) Adequate drainage is provided.

[44CFR 60.3(a)(4) (I thru iii)]

10. Base flood elevation data for subdivision proposals

Require base flood elevation data for subdivision proposals or other developments greater than 50 lots or 5 acres. [44CFR 60.3(b)(3)]

If a subdivision fitting this size description is proposed in the floodplain overlay district where there are not already base flood elevations (BFEs) for each parcel, then the developer must provide BFEs for each parcel so that flood-resistant standards can be appropriately applied. The developer is responsible for providing the necessary technical data to support the base flood elevations shown on his/her design drawings.

11. Recreational vehicles

In A1-30, AH, and AE Zones, all recreational vehicles to be placed on a site must be elevated and anchored or be on the site for less than 180 consecutive days or be fully licensed and highway ready. [44CFR 60.3(c)(14)]

In V1-30, VE, and V Zones, all recreational vehicles to be placed on a site must be elevated and anchored or be on the site for less than 180 consecutive days or be fully licensed & highway ready. [44CFR 60.3(e)(9)]

“Fully licensed and highway ready” means that wheels must be inflated; the vehicle must be self-propelled or towable by a light-duty truck; have no attached deck, porch or shed; and have quick-disconnect sewage, water and electrical connections. In other

words, the vehicle must be ready to relocate immediately upon notification of the possibility of flooding in the area.

12. Protection of dunes

Prohibit alteration of sand dunes which would increase potential flood damage. [44CFR 60.3(e)(7)]

13. Watercourse alterations or relocations in riverine areas

In riverine areas, notify neighboring communities of watercourse alterations or relocations. [44CFR 60.3(b)(6)]

Neighboring communities (and possibly a neighboring state) need to know in advance if the alteration or relocation of a watercourse might change their floodplain or flood risk. Send plans for this development to the CEOs of those communities, as well as to the Massachusetts NFIP State Coordinator and to the FEMA Regional Office.

14. Requirement to submit new technical data

Within 6 months, notify FEMA of changes in the base flood elevation by submitting technical or scientific data so insurance & floodplain management can be based on current data. [44CFR 65.3]

Many development changes to the floodplain will trigger the requirement to file a Letter of Map Revision or other type of Letter of Map Change. When the development does not trigger the LOMC requirement but impacts the heights or extents of the base flood (usually to lower the risk), FEMA should be notified that a change was made so that in future map studies/updates this can be adequately addressed.

15. Variances to building code floodplain standards

44CFR 60.6(a)(3-6):

(3) Variances shall only be issued by a community upon (i) a showing of good and sufficient cause, (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances;

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

(5) A community shall notify the applicant in writing over the signature of a community official that (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (ii) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with a record of all variance actions as required in paragraph (a)(6) of this section.

(6) A community shall (i) maintain a record of all variance actions, including justification for their issuance

Because a variance can lead to an increased risk to life and property, variances from flood elevation requirements or other floodplain management requirements should be granted only rarely. Variances for floodplain development regulations must show that:

- Good and sufficient cause and exceptional hardship exist;
- The variance will not result in additional threats to public safety, extraordinary public expense, or fraud or victimization of the public; and
- The variance is the minimum action necessary to afford relief.

In Massachusetts, typically the State Building Code Appeals Board issues a variance to the state building code, unless your community is one of those approved by BBRS for local variance authority. When a local building official's interpretation of the flood-resistant standards under the building code are contested through the appeal process, the community must keep written documentation of both:

- a. the justification for local decision to deny the permit, and
- b. the results of the state's appeal/variance hearing (either in agreement with the local community, or having granted the variance through appeal.)

The community must also send a letter to the property owner stating that the implications of this variance may adversely impact the cost of the flood insurance policy covering the structure.

A FEMA suggestion for language to be used in such a letter is as follows:

"The granting of this variance may result in increased flood insurance premium rates, up to \$25 per \$100 of coverage, and such construction below the base flood level increases risks to life and property."

The justification for the variance (or the denial of the variance) and the community letter must be maintained as documentation that these actions were taken.

16. Variances to local Zoning Bylaws related to community compliance with the National Flood Insurance Program (NFIP)

Please note: This section addresses local Zoning Board variances only, and applies only when other variance procedures (such as those under the state building code) do not cover the variance request.

§60.6 Variances and exceptions. Excerpts:

(a) The Federal Insurance Administrator does not set forth absolute criteria for granting variances from the criteria set forth in §§60.3, 60.4, and 60.5. The issuance of a variance is for flood plain management purposes only.

The community, after examining the applicant's hardships, shall approve or disapprove a request.

The Federal Insurance Administrator may review a community's findings justifying the granting of variances, and if that review indicates a pattern inconsistent with the objectives of sound flood plain management, the Federal Insurance Administrator may take appropriate action under §59.24(b) of this subchapter.

Procedures for the granting of variances by a community are as follows:

(1) Variances shall not be issued by a community within any designated regulatory floodway if any increase in flood levels during the base flood discharge would result;

(3) Variances shall only be issued by a community upon (i) a showing of good and sufficient cause, (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances;

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

(5) A community shall notify the applicant in writing over the signature of a community official that (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (ii) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with a record of all variance actions as required in paragraph (a)(6) of this section; and

(6) A community shall (i) maintain a record of all variance actions, including justification for their issuance, and (ii) report such variances issued in its annual or biennial report submitted to the Federal Insurance Administrator.

(7) Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that (i) the criteria of paragraphs (a)(1) through (a)(4) of this section are met, and (ii) the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

For further information, see FEMA publication P-993, "Variances & the National Flood Insurance Program."

From the State NFIP Coordinating Office: For all variances to floodplain development regulations, the community must maintain documentation that includes the variance request; determinations made by the entity granting the request that the three criterium listed above have been met; a copy of the letter to the property owner

regarding possible insurance premium impacts; and that all appropriate flood protection and hazard mitigation measures were taken where applicable and possible, as specifically described in the variance file.

17. Abrogation and greater restriction section

The community must provide that floodplain management regulations take precedence over any less restrictive conflicting local laws, ordinances or codes. [44CFR 60.1(b)]

This is a legal provision that specifies that the floodplain management bylaw, ordinance, regulations, and building codes take precedence over less restrictive requirements.

18. Disclaimer of liability

The community must state that the degree of flood protection required by the ordinance is considered reasonable but does not imply total flood protection.

19. Severability section

If any section, provision or portion of the ordinance is deemed unconstitutional or invalid by a court, the remainder of the ordinance shall still be effective.

20. Local Enforcement

The NFIP requires that the floodplain management ordinance be legally enforceable and enforced uniformly throughout the community. [44 CFR 60.1(b)]

Sample bylaw language has not been offered regarding local enforcement of flood-resistant and flood reduction standards because enforcement is typically already addressed elsewhere in codes that are locally enforced.

As a part of implementing the NFIP in a local community, however, FEMA will need to know how the community enforces these regulations and standards. Each NFIP community should be prepared to answer the following questions:

1. How do you enforce the building code in your community? What specific actions are taken, and how are these actions documented? What penalties are specified?
[Definitions and regulations related to building code enforcement are found in

CMR 780 Chapter 1 Sections 114 and 115, which refer to M.G.L. c. 143, c. 148, and M.G.L. c. 148A, and specifically M.G.L. c. 143, section 94(a.)]

2. How do you enforce the Wetlands Protection Act? What actions and documentation exist to prove that enforcement was implemented? *[Enforcement regulations related to the Wetlands Protection Act are found in 310 CMR section 10.08.]*
3. How are other NFIP floodplain development requirements enforced, such as fencing that increases flood risk, the placement of recreational vehicles in the floodplain, re-grading of large commercial properties, construction of agricultural structures, placement of tanks, pools, temporary construction offices, etc.?

FEMA will expect to hear about a rigorous enforcement program that includes specific actions taken by the community for non-compliant floodplain development.

Enforcement provisions establish the responsibilities of persons, enforcement authority, what makes a violation, notice of violation, stop work and other orders, and citation and penalties for violations. These penalties may include fines and/or jail sentences.

Explanations for Definitions found in Section 3

Development. FEMA's minimum standards for the NFIP require review of, and possibly permitting for all activities defined as development within the Special Flood Hazard Area (SFHA.) Some of these activities might not normally require permitting under existing state or local regulations, and not all of these activities might be reviewed by the building department in a community.

Flood Boundary & Floodway Map. Some communities with older mapping (typically 1987 and prior) have two sets of flood maps, the familiar Flood Insurance Rate Map (FIRM) and the Flood Boundary & Floodway Map (FBFM). The floodway is delineated only on the FBFM. Communities with a FBFM must include it in the district definition in order to enforce floodway standards.

Flood Hazard Boundary Map. Communities with very old mapping (usually prior to 1980) might have a Flood Hazard Boundary Map (FHBM). This map must be referenced in the community's floodplain district definition. In most cases the FHBM has been converted to a FIRM by letter but the map will still say "Flood Hazard Boundary Map."

Floodway, Regulatory Floodway. The floodway, or regulatory floodway, is established by regulation and through hydraulic analysis. It is not a natural, physical feature of the watercourse. It is part of the 100-year floodplain but has specific requirements that exceed those in the floodplain fringe (the rest of the floodplain). The NFIP standards for floodway encroachments (for example including no-rise analysis) are not in state regulations.

Functionally dependent use. This term is used in the evaluation of variances to floodplain management standards. Sometimes variances can be issued for functionally dependent uses.

Highest adjacent grade. In an AO zone, the base flood elevation is determined by adding the depth indicated on the FIRM to the highest adjacent grade, or two feet if no depth is indicated (and if no alternative floodplain analysis is conducted and applied.)

Historic structure. NFIP standards for substantial improvement include an exception for structures that are identified as historic structures. Only those structures meeting this definition are eligible for this exception.

New construction. NFIP minimum standards apply to all new construction, which includes improvements to structures defined as new construction. as follows: (1) new construction, including subsequent work to such structures, and (2) work classified as

substantial improvement of an existing structure that is not an historic structure. [ASCE 24-14]

Recreational vehicle. NFIP elevation standards can sometimes apply to these vehicles when they are placed in the SFHA.

Special Flood Hazard Area (SFHA). The flood-prone areas on the FEMA maps (and subsequently adopted in a community's Floodplain Overlay District) where NFIP minimum standards apply. within special flood hazard areas.

Start of construction. Knowing the start of construction, as defined, can sometimes determine which version of a FIRM or regulation is used in situations where the FIRM or the regulation has been or is being updated.

Structure. NFIP minimum standards apply to all structures meeting this definition.

Substantial Repair of a Foundation. This is a Massachusetts unique definition included in the 9th Edition Building Code. It is important to be familiar with this definition as Building Code standards will apply.

Variance. It is important to understand the term in order to properly administer, consider and potentially issue variances. Note that variances are not the same as (and shouldn't be confused with) similar terms and/or processes such as special permits, exceptions or exemptions. Variances to standards enforced under state regulations must be administered through the proper state authority.

Violation. Violations can affect the community's standing in the NFIP and will likely result in higher flood insurance premiums. Violations can also prevent a community from entering participating in the Community Rating System.