

ORDINANCE NO. –N.S.

REPEALING AND REENACTING CHAPTER 17.12 OF THE BERKELEY MUNICIPAL CODE REGULATING FLOOD ZONE DEVELOPMENT, TO COMPLY WITH CURRENT NATIONAL FLOOD INSURANCE PROGRAM REQUIREMENTS

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Berkeley Municipal Code Chapter 17.12 is hereby repealed and reenacted to read as follows:

Section 17.12

FLOOD ZONE DEVELOPMENT

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17.12.010 Title and applicability

- A. This Section shall be known and cited as the “Flood Zone Development Ordinance.”
- B. This Section shall apply to all areas of special flood hazards, within the jurisdiction of the City of Berkeley.

17.12.020 Findings of fact

- A.** The flood hazard areas of the City of Berkeley are subject to periodic inundation that can result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.
- B.** These flood losses are caused by uses that are inadequately elevated, floodproofed, or protected from flood damage. The cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities also contributes to flood losses.

17.12.030 Purposes

- A.** The purposes of this Section are to protect human life and health, promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by imposing regulations in all publicly and privately owned land within flood prone, mudslide (i.e. mudflow) or flood related erosion areas.
- B.** The specific purposes of this Section are to:
 - 1. Minimize expenditure of public money for costly flood control projects;
 - 2. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
 - 3. Minimize prolonged business interruptions;
 - 4. Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone and sewer lines; and streets and bridges located in areas of special flood hazard;
 - 5. 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 blighted areas caused by flood damage;
 - 6. Ensure that potential buyers are notified that property is in an area of special flood hazard; and
 - 7. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.
- C.** The regulations imposed by this Section are intended to accomplish its purposes by:

1. 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 or flood heights or velocities;
2. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
3. Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;
4. Controlling filling, grading, dredging, and other development which may increase flood damage; and
5. Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

17.12.040 Disclaimer of liability

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This ordinance does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This ordinance shall not create liability on the part of City Council, any officer or employee thereof, the State of California, or the Federal Emergency Management Agency, for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

17.12.050 Definitions

Unless specifically defined below, words or phrases used in this Section shall be interpreted so as to give them the meaning they have in common usage and to give this Section its most reasonable application.

- A. "**A zone**" - see "**Special flood hazard area**".
- B. "**Accessory structure**" means a structure that is either:
 1. Solely for the parking of no more than 2 cars; or
 2. A small, low cost shed for limited storage, less than 150 square feet and \$1,500 in value (as referenced to the 2009 Consumer Price Index for the San Francisco Bay Area).

- C. "**Accessory use**" means a use which is incidental and subordinate to the principal use of the parcel of land on which it is located.
- D. "**Alluvial fan**" means a geomorphologic feature characterized by a cone or fan-shaped deposit of boulders, gravel, and fine sediments that have been eroded from mountain slopes, transported by flood flows, and then deposited on the valley floors, and which is subject to flash flooding, high velocity flows, debris flows, erosion, sediment movement and deposition, and channel migration.
- E. "**Apex**" means a point on an alluvial fan or similar landform below which the flow path of the major stream that formed the fan becomes unpredictable and alluvial fan flooding can occur.
- F. "**Appeal**" means a request for a review of the Floodplain Administrator's interpretation of any provision of this ordinance.
- G. "**Area of shallow flooding**" means a designated AO or AH Zone on the Flood Insurance Rate Map (FIRM). The base flood depths range from one to three feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.
- H. "**Area of special flood hazard**" - See "Special flood hazard area."
- I. "**Base flood**" means a flood which has a one percent chance of being equaled or exceeded in any given year (also called the "100-year flood"). Base flood is the term used throughout this ordinance.
- J. "**Base flood elevation**" (BFE) means the elevation shown on the Flood Insurance Rate Map for Zones AE, AH, A1-30, VE and V1-V30 that indicates the water surface elevation resulting from a flood that has a 1-percent or greater chance of being equaled or exceeded in any given year.
- K. "**Basement**" means any area of the building having its floor subgrade - i.e., below ground level - on all sides.
- L. "**Breakaway walls**" are any type of walls, whether solid or lattice, and whether constructed of concrete, masonry, wood, metal, plastic or any other suitable building material which is not part of the structural support of the building and which is designed to break away under abnormally high tides or wave action without causing any damage to the structural integrity of the building on which they are used or any buildings to which they might be carried by flood waters. A breakaway wall shall have a safe design loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakaway walls must be certified by a registered engineer or architect and shall meet the following conditions:

1. Breakaway wall collapse shall result from a water load less than that which would occur during the base flood; and
2. The elevated portion of the building shall not incur any structural damage due to the effects of wind and water loads acting simultaneously in the event of the base flood.

M. "**Building**" - see "**Structure**".

N. "**Coastal high hazard area**" means 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. It is an area subject to high velocity waters, including coastal and tidal inundation or tsunamis. The area is designated on a Flood Insurance Rate Map (FIRM) as Zone V1-V30, VE, or V.

O. "**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 of equipment or materials.

P. "**Permit**" means any permit as required by the City of Berkeley for "development" or any other activities in the City and includes but is not limited "Permits" as defined by and issued under Title 23, as well as permits and entitlements issued under Title 19, and Section 17.08.

Q. "**Encroachment**" means the advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures or development into a floodplain which may impede or alter the flow capacity of a floodplain.

R. "**Existing manufactured home park or subdivision**" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before July 25, 1978.

S. "**Expansion to an existing manufactured home park or subdivision**" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

T. "**Flood**", "**flooding**", or "**flood water**" means:

1. A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters; the

unusual and rapid accumulation or runoff of surface waters from any source; and/or mudslides (i.e., mudflows); and

2. The condition resulting from flood-related erosion.

- U. "**Flood Boundary and Floodway Map (FBFM)**" means the official map on which the Federal Emergency Management Agency or Federal Insurance Administration has delineated both the areas of special flood hazards and the floodway.
- V. "**Flood Insurance Rate Map (FIRM)**" means the official map on which the Federal Emergency Management Agency or Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.
- W. "**Flood Insurance Study**" means the official report provided by the Federal Insurance Administration that includes flood profiles, the Flood Insurance Rate Map, the Flood Boundary and Floodway Map, and the water surface elevation of the base flood.
- X. "**Floodplain**" or "**flood-prone area**" means any land area susceptible to being inundated by water from any source - see "**Flooding**."
- Y. "**Floodplain management**" means the operation of an overall program of corrective and preventive measures for reducing flood damage and preserving and enhancing, where possible, natural resources in the floodplain, including but not limited to emergency preparedness plans, flood control works, floodplain management regulations, and open space plans.
- Z. "**Floodplain management regulations**" means this ordinance and other zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as grading and erosion control) and other application of police power which control development in flood-prone areas. This term describes federal, state or local regulations in any combination thereof which provide standards for preventing and reducing flood loss and damage.
- AA. "**Floodproofing**" means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents. For guidelines on dry and wet floodproofing, see FEMA Technical Bulletins TB 1-93, TB 3-93, and TB 7-93.
- AB. "**Floodway**" means 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 one foot. Also referred to as "Regulatory Floodway."

AC. "**Floodway fringe**" is that area of the floodplain on either side of the "Regulatory Floodway" where encroachment may be permitted.

AD. Reserved

AE. "**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, and does not include long-term storage or related manufacturing facilities.

AF. "**Hardship**" as used in this Section means the exceptional hardship that would result from a failure to grant the requested variance. The City Council requires that the variance be exceptional, unusual, and peculiar to the property involved. Mere economic or financial hardship alone is not exceptional. Inconvenience, aesthetic considerations, physical handicaps, personal preferences, or the disapproval of one's neighbors likewise cannot, as a rule, qualify as an exceptional hardship. All of these problems can be resolved through other means without granting a variance, even if the alternative is more expensive, or requires the property owner to build elsewhere or put the parcel to a different use than originally intended.

AG. "**Highest adjacent grade**" means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

AH. "**Historic structure**" means 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 by an approved state program as determined by the Secretary of the Interior or directly by the

Secretary of the Interior in states without approved programs.

- AI. "**Levee**" means a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding.
- AJ. "**Levee system**" means a flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accord with sound engineering practices.
- AK. "**Lowest floor**" means the lowest floor of the lowest enclosed area, including basement (see "**Basement**" definition).
1. An unfinished or flood resistant enclosure below the lowest floor that is 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 it conforms to applicable non-elevation design requirements, including, but not limited to:
 - a. The flood openings standard in Section 17.12.090.C.3;
 - b. The anchoring standards in Section 17.12.090.A;
 - c. The construction materials and methods standards in Section 17.12.090.B; and
 - d. The standards for utilities in Section 17.12.100.
 2. For residential structures, all subgrade enclosed areas are prohibited as they are considered to be basements (see "**Basement**" definition). This prohibition includes below-grade garages and storage areas.
- AL. "**Manufactured home**" means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle".
- AM. "**Manufactured home park or subdivision**" means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.
- AN. "**Market value**" is defined in the City of Berkeley substantial damage/improvement procedures. See Section 17.12.080.
- AO. "**Mean sea level**" means, for purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929, North American Vertical Datum (NAVD) of 1988, or other datum, to which base flood elevations shown on a community's Flood Insurance Rate Map are referenced.

AP. **"New construction"**, for floodplain management purposes, means structures for which the "start of construction" commenced on or after July 25, 1978, and includes any subsequent improvements to such structures.

AQ. **"New manufactured home park or subdivision"** means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after July 25, 1978.

AR. **"Obstruction"** includes, but is not limited to, any dam, wall, wharf, embankment, levee, dike, pile, abutment, protection, excavation, channelization, bridge, conduit, culvert, building, wire, fence, rock, gravel, refuse, fill, structure, vegetation or other material in, along, across or projecting into any watercourse which may alter, impede, retard or change the direction and/or velocity of the flow of water, or due to its location, its propensity to snare or collect debris carried by the flow of water, or its likelihood of being carried downstream.

AS. **"One-hundred-year flood"** or "100-year flood" - see **"Base flood."**

AT. **"Primary frontal dune"** means a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes immediately landward and adjacent to the beach and subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune occurs at the point where there is a distinct change from a relatively mild slope.

AU. **"Program deficiency"** means a defect in a community's floodplain management regulations or administrative procedures that impairs effective implementation of those floodplain management regulations.

AV. **"Public safety and nuisance"** as related to this Section, means that the granting of a variance must not result in anything which is injurious to safety or health of an entire community or neighborhood, or any considerable number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin.

AW. **"Recreational vehicle"** means a vehicle which is:

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

- AX. "**Regulatory floodway**" means 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 one foot.
- AY. "**Remedy a violation**" means to bring the structure or other development into compliance with State or local floodplain management regulations, or if this is not possible, to reduce the impacts of its noncompliance. Ways that impacts may be reduced include protecting the structure or other affected development from flood damages, implementing the enforcement provisions of the ordinance or otherwise deterring future similar violations, or reducing State or Federal financial exposure with regard to the structure or other development.
- AZ. "**Riverine**" means relating to, formed by, or resembling a river (including tributaries), stream, brook, etc.
- BA. "**Sheet flow area**" - see "**Area of shallow flooding**."
- BB. "**Special flood hazard area (SFHA)**" means an area in the floodplain subject to a 1 percent or greater chance of flooding in any given year. It is shown on an FHBM or FIRM as Zone A, AO, A1-A30, AE, A99, AH, V1-V30, VE or V.
- BC. "**Start of construction**" includes substantial improvement and other proposed new development 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 manufacture 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.
- BD. "**Structure**" means a walled and roofed building that is principally above ground; this includes a gas or liquid storage tank or a manufactured home.
- BE. "**Substantial damage**" means 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.

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

BG. "**V zone**" - see "**Coastal high hazard area.**"

BH. "**Variance**" means a grant of relief from the requirements of this ordinance which permits construction in a manner that would otherwise be prohibited by this ordinance.

BI. "**Violation**" means the failure of a structure or other development to be fully compliant with this ordinance. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this ordinance is presumed to be in violation until such time as that documentation is provided.

BJ. "**Water surface elevation**" means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929, North American Vertical Datum (NAVD) of 1988, or other datum, of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

BK. "**Watercourse**" means a lake, river, creek, stream, wash, arroyo, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur, but watercourse does not include storm drain pipes.

17.12.060 Basis for establishing the areas of special flood hazard

The areas of special flood hazard identified by the Federal Emergency Management Agency (FEMA) in the "Flood Insurance Study (FIS) for Flood Insurance Study, Alameda County, California and Incorporated Areas" dated August 3, 2009, with accompanying Flood Insurance Rate Maps (FIRM's) and Flood Boundary and Floodway Maps (FBFM's), dated August 3, 2009, and all subsequent amendments and/or revisions, are hereby adopted by reference and declared to be a part of this ordinance.

This FIS and attendant mapping is the minimum area of applicability of this ordinance and may be supplemented by studies for other areas which allow implementation of this ordinance and which are recommended to the City Council by the Floodplain Administrator. The study, FIRM's and FBFM's are on file at Department of Public Works, 1947 Center Street, 4th Floor, Berkeley, CA 94704.

17.12.070 Compliance

No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violation of the requirements (including violations of conditions and safeguards) shall constitute a misdemeanor. Nothing herein shall prevent the City Council from taking such lawful action as is necessary to prevent or remedy any violation.

17.12.080 Duties and responsibilities of the floodplain administrator

- A. The Director of Public Works or his or her designee shall be the Floodplain Administrator ("FPA") of the City of Berkeley.
- B. The duties and responsibilities of the Floodplain Administrator shall include, but not be limited to those set forth below.
 1. The FPA shall coordinate with the Zoning Officer, Building Official, and City Engineer to require applicants to provide at least:
 - a. Plans in duplicate, drawn to scale, showing:
 - i. Location, dimensions, and elevation of the area in question, existing or proposed structures, storage of materials and equipment and their location;
 - ii. Proposed locations of water supply, sanitary sewer, and other utilities;
 - iii. Grading information showing existing and proposed contours, any proposed fill, and drainage facilities;
 - iv. Location of the regulatory floodway when applicable;
 - v. Base flood elevation information as specified in Section 17.12.060 or Section 17.12.080.B.4;
 - vi. Proposed elevation in relation to mean sea level, of the lowest floor (including basement) of all structures; and
 - vii. Proposed elevation in relation to mean sea level to which any nonresidential structure will be floodproofed, as required in Section 17.12.090.C.2 of this ordinance and detailed in FEMA Technical Bulletin TB 3-93.
 - b. Certification from a registered civil engineer or architect that the nonresidential floodproofed building meets the floodproofing criteria in Section 17.12.090.C.2.
 - c. For a crawl-space foundation, location and total net area of foundation openings as required in Section 17.12.090.C.3 of this ordinance and detailed in FEMA Technical Bulletins 1-93 and 7-93.

- d. Description of the extent to which any watercourse will be altered or relocated as a result of proposed development and proof that requirements of Section 17.08 have been fulfilled.
 - e. All appropriate certifications listed in Section 17.12.080.B.6 of this ordinance.
 2. The FPA shall review all Permits for Development that fall within the Special Flood Hazard Area (SFHA), and qualify as New Construction or Substantial Improvement to determine whether:
 - a. the applications is complete;
 - b. the requirements of this Section have been satisfied, including determination of substantial improvement and substantial damage of existing structures;
 - c. all other required state and federal permits have been obtained;
 - d. the site is reasonably safe from flooding;
 - e. the proposed development does not adversely affect the carrying capacity of areas where base flood elevations have been determined but a floodway has not been designated. This means 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 City of Berkeley; and
 - f. all Letters of Map Revision (LOMR's) for flood control projects have been approved prior to the issuance of building permits. Building Permits must not be issued based on Conditional Letters of Map Revision (CLOMR's). Approved CLOMR's allow construction of the proposed flood control project and land preparation as specified in the "start of construction" definition.
3. The FPA shall use FEMA publication FEMA 213, "Answers to Questions About Substantially Damaged Buildings," to develop detailed procedures for identifying and administering requirements for substantial improvement and substantial damage, to include defining "Market Value."
4. When base flood elevation data has not been provided in accordance with Section 17.12.060, the Floodplain Administrator shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal or state agency, or other source, in order to administer this Section. A base flood elevation may be obtained using one of two methods from the FEMA publication, FEMA 265, "Managing Floodplain Development in Approximate Zone A Areas – A Guide for Obtaining and Developing Base (100-year) Flood Elevations" dated July 1995.
5. Notification of Other Agencies.
 - a. Alteration or relocation of a watercourse.
 - i. Notify adjacent communities and the California Department of Water Resources prior to alteration or relocation;

- ii. Submit evidence of such notification to the Federal Emergency Management Agency; and
 - iii. Assure that the flood carrying capacity within the altered or relocated portion of said watercourse is maintained.
 - b. Base Flood Elevation changes due to physical alterations.
 - i. Within 6 months of information becoming available or project completion, whichever comes first, the floodplain administrator shall submit or assure that the permit applicant submits technical or scientific data to FEMA for a Letter of Map Revision (LOMR).
 - ii. All LOMR's for flood control projects are approved prior to the issuance of building permits. Building Permits must not be issued based on Conditional Letters of Map Revision (CLOMR's). Approved CLOMR's allow construction of the proposed flood control project and land preparation as specified in the "start of construction" definition.
 - iii. Such submissions are necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and floodplain management requirements are based on current data.
 - c. Changes in corporate boundaries. Notify FEMA in writing whenever the corporate boundaries have been modified by annexation or other means and include a copy of a map of the community clearly delineating the new corporate limits.
6. Documentation of Floodplain Development. Obtain and maintain for public inspection and make available as needed the following:
- 1. Certification required by Section 17.12.090 (lowest floor elevations);
 - 2. Certification required by Section 17.12.090 (elevation or floodproofing of nonresidential structures);
 - 3. Certification required by Section 17.12.090 (wet floodproofing standard);
 - 4. Certification of elevation required by Section 17.12.110 (subdivisions and other proposed development standards);
 - 5. Certification required by Section 17.12.140 (floodway encroachments);
 - 6. Information required by Section 17.12.150 (coastal construction standards); and
 - 7. Maintain a record of all variance actions, including justification for their issuance, and report such variances issued in its biennial report submitted to the Federal Emergency Management Agency.

7. Map determination

Make interpretations where needed, as to the exact location of the boundaries of the areas of special flood hazard, where there appears to be a conflict between a mapped boundary and actual field conditions. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in Section 17.12.180.

8. Remedial action

Take action to remedy violations of this ordinance as specified in Section 17.12.070.

9. Biennial report

Complete and submit Biennial Report to FEMA.

10. Planning

Assure community's General Plan is consistent with floodplain management objectives herein.

17.12.090 Standards of construction

In all areas of special flood hazards the following standards are required:

A. Anchoring

All new construction and substantial improvements of structures, including manufactured homes, shall be adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

B. Construction materials and methods

All new construction and substantial improvements of structures, including manufactured homes, shall be constructed:

1. With flood resistant materials, and utility equipment resistant to flood damage for areas below the base flood elevation;
2. Using methods and practices that minimize flood damage;
3. With electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding; and
4. Within Zones AH or AO, so that there are adequate drainage paths around structures on slopes to guide flood waters around and away from proposed structures.

C. Elevation and floodproofing

1. Residential construction

All new construction or substantial improvements of residential structures shall have the lowest floor, including basement:

- a. In AE, AH, A1-30 Zones, elevated to or above the base flood elevation.
- b. In an AO zone, elevated above the highest adjacent grade to a height equal to or exceeding the depth number specified in feet on the FIRM, or elevated at least 2 feet above the highest adjacent grade if no depth number is specified.
- c. In an A zone, without BFE's specified on the FIRM [unnumbered A zone], elevated to or above the base flood elevation; as determined under Section 17.12.080.

Upon the completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered civil engineer or licensed land surveyor, and verified by the community building inspector to be properly elevated. Such certification and verification shall be provided to the Floodplain Administrator.

2. Nonresidential construction

All new construction or substantial improvements of nonresidential structures shall either be elevated to conform with Section 17.12.090.C.1 or:

- a. Be floodproofed, together with attendant utility and sanitary facilities, below the elevation recommended under Section 17.12.090.C.1, so that the structure is watertight with walls substantially impermeable to the passage of water;
- b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and
- c. Be certified by a registered civil engineer or architect that the standards of Section 17.12.090.C.2.a and Section 17.12.090.C.2.b are satisfied. Such certification shall be provided to the Floodplain Administrator.

3. Flood openings

All new construction and substantial improvements of structures with fully enclosed areas below the lowest floor (excluding basements) that are usable solely for parking of vehicles, building access or storage, and which are subject to flooding, shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwater. Designs for meeting this requirement must meet the following minimum criteria:

- a. For non-engineered openings:
 - 1. Have a minimum of two openings on different sides having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding;
 - 2. The bottom of all openings shall be no higher than one foot above

- grade;
 - 3. Openings may be equipped with screens, louvers, valves or other coverings or devices provided that they permit the automatic entry and exit of floodwater; and
 - 4. Buildings with more than one enclosed area must have openings on exterior walls for each area to allow flood water to directly enter; or
- b. Be certified by a registered civil engineer or architect.
- 4. Manufactured homes
 - See Section 17.12.120.
 - 5. Garages and low cost accessory structures
 - a. Attached garages.
 - 1. A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry of flood waters. See Section 17.12.090.C.3. Areas of the garage below the BFE must be constructed with flood resistant materials. See Section 17.12.090.B.
 - 2. A garage attached to a nonresidential structure must meet the above requirements or be dry floodproofed. For guidance on below grade parking areas, see FEMA Technical Bulletin TB-6.
 - b. Detached garages and accessory structures.
 - 1. "Accessory structures" used solely for parking (2 car detached garages or smaller) or limited storage (small, low-cost sheds), as defined in Section 17.12.050, may be constructed such that its floor is below the base flood elevation (BFE), provided the structure is designed and constructed in accordance with the following requirements:
 - a) Use of the accessory structure must be limited to parking or limited storage;
 - b) The portions of the accessory structure located below the BFE must be built using flood-resistant materials;
 - c) The accessory structure must be adequately anchored to prevent flotation, collapse and lateral movement;
 - d) Any mechanical and utility equipment in the accessory structure must be elevated or floodproofed to or above the BFE;
 - e) The accessory structure must comply with floodplain encroachment provisions in Section 17.12.140; and

- f) The accessory structure must be designed to allow for the automatic entry of flood waters in accordance with Section 17.12.090.C.3.
2. Detached garages and accessory structures not meeting the above standards must be constructed in accordance with all applicable standards in Section 17.12.090.

17.12.100 Standards for utilities

- A. All new and replacement water supply and sanitary sewage systems shall be designed to minimize or eliminate:
 1. Infiltration of flood waters into the systems; and
 2. Discharge from the systems into flood waters.
- B. On-site waste disposal systems shall be located to avoid impairment to them, or contamination from them during flooding.

17.12.110 Standards for subdivisions and other proposed development

- A. All new subdivisions proposals and other proposed development, including proposals for manufactured home parks and subdivisions, greater than 50 lots or 5 acres, whichever is the lesser, shall:
 1. Identify the Special Flood Hazard Areas (SFHA) and Base Flood Elevations (BFE).
 2. Identify the elevations of lowest floors of all proposed structures and pads on the final plans.
 3. If the site is filled above the base flood elevation, the following as-built information for each structure shall be certified by a registered civil engineer or licensed land surveyor and provided as part of an application for a Letter of Map Revision based on Fill (LOMR-F) to the Floodplain Administrator:
 - a. Lowest floor elevation.
 - b. Pad elevation.
 - c. Lowest adjacent grade.
- B. All subdivision proposals and other proposed development shall be consistent with the need to minimize flood damage.
- C. All subdivision proposals and other proposed development shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.

- D. All subdivisions and other proposed development shall provide adequate drainage to reduce exposure to flood hazards.

17.12.120 Standards for manufactured homes

- A. All manufactured homes that are placed or substantially improved, on sites located: (1) outside of a manufactured home park or subdivision; (2) in a new manufactured home park or subdivision; (3) in an expansion to an existing manufactured home park or subdivision; or (4) in an existing manufactured home park or subdivision upon which a manufactured home has incurred "substantial damage" as the result of a flood, shall:
1. Within Zones A1-30, AH, and AE on the community's Flood Insurance Rate Map, be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely fastened to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.
 2. Within Zones V1-30, V, and VE on the community's Flood Insurance Rate Map, meet the requirements of Section 17.12.150.
- B. All manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within Zones A1-30, AH, AE, V1-30, V, and VE on the community's Flood Insurance Rate Map that are not subject to the provisions of Section 17.12.120.A will be securely fastened to an adequately anchored foundation system to resist flotation, collapse, and lateral movement, and be elevated so that either the:
1. Lowest floor of the manufactured home is at or above the base flood elevation; or
 2. 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.

Upon the completion of the structure, the elevation of the lowest floor including basement shall be certified by a registered civil engineer or licensed land surveyor, and verified by the community building inspector to be properly elevated. Such certification and verification shall be provided to the Floodplain Administrator.

17.12.130 Standards for recreational vehicles

- A. All recreational vehicles placed in Zones A1-30, AH, AE, V1-30 and VE will either:

1. Be on the site for fewer than 180 consecutive days; or
 2. Be fully licensed and ready for highway use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or
 3. Meet the permit requirements of Section 17.12.080 of this ordinance and the elevation and anchoring requirements for manufactured homes in Section 17.12.120.
- B.** Recreational vehicles placed on sites within Zones V1-30, V, and VE on the community's Flood Insurance Rate Map will meet the requirements of Section 17.12.130.A and Section 17.12.150.

17.12.140 Floodways

In addition, the following provisions apply to Development in Floodways:

- A.** Until a regulatory floodway is adopted, no new construction, substantial development, or other development (including fill) shall be permitted within Zones A1-30 and AE, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other development, will not increase the water surface elevation of the base flood more than 1 foot at any point within the City of Berkeley.
- B.** Within an adopted regulatory floodway, the City of Berkeley shall prohibit encroachments, including fill, new construction, substantial improvements, and other development, unless certification by a registered civil engineer is provided demonstrating that the proposed encroachment shall not result in any increase in flood levels during the occurrence of the base flood discharge.
- C.** If Section 17.12.140.A and Section 17.12.140.B are satisfied, all new construction, substantial improvement, and other proposed new development shall comply with all other applicable flood hazard reduction provisions of Section 17.12.090, Section 17.12.100, Section 17.12.110, Section 17.12.120, Section 17.12.130, Section 17.12.140, and Section 17.12.150.

17.12.150 Coastal high hazard areas

Within coastal high hazard areas, Zones V, V1-30, and VE, as established under Section 17.12.060, the following standards shall apply:

- A.** All new residential and non-residential construction, including substantial improvement/damage, shall be elevated on adequately anchored pilings or

columns and securely anchored to such pilings or columns so that the bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood level. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable state or local building standards.

- B.** All new construction and other development shall be located on the landward side of the reach of mean high tide.
- C.** All new construction and substantial improvement shall have the space below the lowest floor free of obstructions or constructed with breakaway walls as defined in Section 17.12.050 of this ordinance. Such enclosed space shall not be used for human habitation and will be usable solely for parking of vehicles, building access or storage.
- D.** Fill shall not be used for structural support of buildings.
- E.** The Floodplain Administrator shall obtain and maintain the following records:
 - 1. Certification by a registered engineer or architect that a proposed structure complies with Section 17.12.150.A; and
 - 2. The elevation (in relation to mean sea level) of the bottom of the lowest horizontal structural member of the lowest floor (excluding pilings or columns) of all new and substantially improved structures, and whether such structures contain a basement.

17.12.180 Appeals

- A.** A decision by the Floodplain Administrator may be appealed by appealing any other contemporaneous permit decision with which it is associated. If a decision by the FPA is not associated with another contemporaneous permit decision, it may be appealed to the City Manager within 15 days of written notice of the Floodplain Administrator's decision. The appeal must include all technical and scientific information needed to support the appeal.
- B.** The City Manager shall act within 30 days of receipt of the appeal.
- C.** The City Manager's decision shall be final.
- D.** Changes to the FIRM shall follow FEMA requirements and procedures.

17.12.190 Variances

- A. Variances may be issued for New Construction, Substantial Improvement, and other proposed new development necessary for the conduct of a Functionally Dependent use as set forth in this Section.
- B. The FPA may approve a variance from the standards set forth in this Section if he or she finds that that complying with the requirements of this Section would create an exceptional hardship to the applicant or the surrounding property owners as the result of unusual physical characteristics of the subject property that are unique to that property and not shared by adjacent parcels.
- C. In addition, variances may be issued for the repair or rehabilitation of "**historic structures**" upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as an historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
- D. A variance shall not be approved if it would result in increased flood heights, additional threats to public safety, or extraordinary public expense, create a nuisance, or conflict with existing local laws or ordinances.
- E. In all cases, the FPA shall take into consideration the following factors:
 - 1. Danger that materials may be swept onto other lands to the injury of others;
 - 2. Danger of life and property due to flooding or erosion damage;
 - 3. Susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the existing individual owner and future owners of the property;
 - 4. Importance of the services provided by the proposed facility to the community;
 - 5. Necessity to the facility of a waterfront location, where applicable;
 - 6. Availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;
 - 7. Compatibility of the proposed use with existing and anticipated development;
 - 8. Relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
 - 9. Safety of access to the property in time of flood for ordinary and emergency

vehicles;

10. Expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site; and
 11. Costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water system, and streets and bridges.
- F. All variances shall be the minimum necessary considering the flood hazard, to afford relief. "Minimum necessary" means to afford relief with a minimum of deviation from the requirements of this ordinance.
- G. The FPA may attach such conditions to the granting of variances as he or she deems necessary to further the purposes of this ordinance.
- H. The issuance of a variance is for floodplain management purposes only. Insurance premium rates are determined by statute according to actuarial risk and will not be modified by the granting of a variance.
- I. Any applicant to whom a variance is granted shall be given written notice that:
1. 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
 2. Such construction below the base flood level increases risks to life and property. It is recommended that a copy of the notice shall be recorded by the Floodplain Administrator in the Office of the County of Alameda Recorder and shall be recorded in a manner so that it appears in the chain of title of the affected parcel of land.
- J. The Floodplain Administrator shall maintain a record of all variance actions, including justification for their issuance, and report such variances issued in the City's biennial report submitted to the Federal Emergency Management Agency.

17.12.200 Abrogation and greater restrictions

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

17.12.210 Interpretation

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

- A. Considered as minimum requirements;
- B. Liberally construed in favor of the City of Berkeley; and
- C. Deemed neither to limit nor repeal any other powers granted under state statutes.

17.12.220 Severability

If any word, phrase, sentence, part, section, subsection, or other portion of this Section, which constitutes the City of Berkeley Flood Zone Development Ordinance, or any application thereof to any person or circumstance is declared void, unconstitutional, or invalid for any reason, then such word, phrase, sentence, part, section, subsection, or other portion, or the proscribed application thereof, shall be severable, and the remaining provisions of this Section, and all applications thereof, not having been declared void, unconstitutional or invalid, shall remain in full force and effect. The City Council hereby declares that it would have passed this Section, and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases had been declared invalid or unconstitutional.

Section 2. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of Council Chambers, 2134 Martin Luther King Jr. Way. Within 15 days of adoption, copies of this Ordinance shall be filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.

At a regular meeting of the Council of the City of Berkeley held on September 22, 2009, this Ordinance was passed to print and ordered published by posting by the following vote:

Ayes: Anderson, Arreguin, Capitelli, Maio, Moore, Wengraf, Worthington, Wozniak and Bates.

Noes: None.

Absent: None.