

SECTION 12-2000 FLOODPLAIN MANAGEMENT AND FLOOD DAMAGE PREVENTION REGULATIONS

- 12-2001 Findings of Fact
- 12-2002 Statement of Purpose
- 12-2003 Methods of Reducing Flood Losses
- 12-2004 Definitions
- 12-2005 General Provisions
 - 12-2005.01 Land to Which These Regulations Apply
 - 12-2005.02 Basis for Establishing the Floodplains and Special Flood Hazard Areas
 - 12-2005.03 Establishment of the Floodplain Development Permit
 - 12-2005.04 Compliance
 - 12-2006.05 Abrogation and Greater Restrictions
 - 12-2005.06 Interpretation
 - 12-2005.07 Warning and Disclaimer of Liability
- 12-2006 Administration
- 12-2007 Methods for Flood Hazard Reduction
 - 12-2007.01 Designation of the Floodplain Administrator
 - 12-2007.02 Subdivision Proposal Standards
 - 12-2007.03 Freeboard
 - 12-2007.04 Floodways
 - 12-2007.05 Flood Fringe Encroachment (Filling)
 - 12-2007.06 Utilities
 - 12-2007.07 Recreational Vehicles
 - 12-2007.08 Existing Structures in Special Flood Hazard Areas
 - 12-2007.09 Critical Facilities

12-2001 FINDINGS OF FACT

12-2001.01 The flood hazard areas of Unincorporated Arapahoe County are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, all of which adversely affect the health, safety and general welfare of the public.

12-2001.02 The flood losses are created by the cumulative effect of obstructions in floodplains and special flood hazard areas which cause an increase in flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately elevated, floodproofed or otherwise protected from flood damage contribute to the flood loss.

12-2002 STATEMENT OF PURPOSE

12-2002.01 It is the purpose of the Floodplain Management and Flood Damage Prevention Regulations, (hereinafter referred to as “Floodplain Management Regulations”) to promote the health, safety, and general welfare of the public, and to minimize public and private losses due to flood conditions to specific areas by provisions designed:

- A. To protect human life and health;
- B. To minimize expenditure of public money for costly flood control projects;

- C. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- D. To minimize prolonged business interruptions;
- E. To minimize damage to critical facilities, infrastructure, and other public facilities such as water and gas mains; electric, telephone, and sewer lines; and streets and bridges located in floodplains and special flood hazard areas;
- F. To help maintain a stable tax base by providing for the sound use and development of floodplains and special flood hazard areas so as to minimize future flood blight areas;
- G. To provide a means to respond to requests from potential developers for information supporting a determination regarding whether property is in a floodplain or special flood hazard area;
- H. To ensure that potential buyers are notified that property is in a special flood hazard area or floodplain; and
- I. To provide that those who occupy floodplains or special flood hazard areas assume responsibility for their actions.

12-2002.02 The Floodplain Chapter of the Arapahoe County Stormwater Management Manual, hereinafter referred to as the Stormwater Management Manual, is hereby adopted and declared to be a part of this Code. The Stormwater Management Manual provides detailed requirements for the management and regulation of floodplains and special flood hazard areas.

12-2003 METHODS OF REDUCING FLOOD LOSSES

12-2003.01 To accomplish its purposes, the Floodplain Management Regulations, in conjunction with the Stormwater Management Manual, include methods and provisions for:

- A. Restricting or prohibiting uses which are dangerous to health, safety, and property due to flood water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
- B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- C. Controlling the alteration of natural floodplains, drainageways, and natural protective barriers, which help accommodate or channel flood waters;
- D. Controlling filling, grading, dredging, and other development which may increase flood damage;
- E. Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas; and,
- F. Preventing all new construction or installation of residential or non-residential structures, in any floodplain or special flood hazard area, including F Zone properties.
- G. Restricting encroachments including fill, new construction, and other development in any floodplain or special flood hazard area unless a technical evaluation demonstrates that the encroachments will not result in an increase (no rise) in flood levels during the occurrence of the base flood, or a FEMA-approved CLOMR or County-approved Floodplain Modification Study is provided.
- H. Requiring a minimum clearance, or freeboard of two feet, be provided between the 100-year base flood elevation and the structure's lowest floor and other applicable facilities which may be impacted by or adjacent to the base flood. Freeboard is required to allow for uncertainty in the floodplain modeling, changes to the drainageway (i.e. increased invert due to sedimentation), and to provide an additional factor of safety for structures and facilities which would result in damages or hazards during inundation.
- I. Considering cases where protection should be given from flooding events that are produced by storm events in excess of the 100-year storm event, including access routes that are critical for the protection of the public health, safety, and welfare, or where flooding in excess of the 100-year storm event could result in loss of life, significant damage to utilities and infrastructure, or result in hazardous materials being transported in flood waters. In general, placement of critical facilities within the 500-year floodplain is discouraged.

12-2004 DEFINITIONS

Definitions provided for the terms in the Floodplain Management Regulations are provided in Section 19-200.

12-2005 GENERAL PROVISIONS

12-2005.01 LANDS TO WHICH THESE REGULATIONS APPLY

These regulations shall apply uniformly to all floodplains and special flood hazard areas within the jurisdiction of unincorporated Arapahoe County.

12-2005.02 BASIS FOR ESTABLISHING THE FLOODPLAINS AND SPECIAL FLOOD HAZARD AREAS

The basis for establishing floodplains and special flood hazard areas shall be the boundary of the 100-year floodplain. The extent of this area shall be based upon the best available information including:

A. The Arapahoe County, Colorado, and Incorporated Areas, Flood Insurance Study (FIS) dated September 28, 2018, with the accompanying Flood Insurance Rate Maps (FIRM), produced by the Federal Emergency Management Agency (FEMA) and any revisions thereto, hereby adopted by reference and declared to be part of this Code.

B. The Flood Hazard Area Delineation (FHAD) studies, produced by the Urban Drainage and Flood Control District, as may be amended and updated from time to time, hereby adopted by reference and declared to be a part of this Code.

C. Other 100-year floodplain studies as approved by the County and accepted by the appropriate local, regional, state or federal agencies.

D. As further defined by the requirements of the Floodplain Chapter of the Arapahoe County Stormwater Management Manual.

12-2005.03 ESTABLISHMENT OF THE FLOODPLAIN DEVELOPMENT PERMIT

All development proposed within floodplains or special flood hazard areas and all development constructed, installed, commenced, improved or maintained within floodplains or special flood hazard areas shall be required to obtain a Floodplain Development Permit from the Floodplain Administrator in accordance with the procedures established in the Floodplain Management Regulations and shall pay the fee established by the Board of County Commissioners.

12-2005.04 COMPLIANCE

No structure or land shall hereafter be constructed, located, extended, converted or materially altered without full compliance with the terms of these regulations and other applicable regulations. Nothing herein shall prevent the Floodplain Administrator, acting on behalf of the Board of County Commissioners, from taking such lawful action as is necessary to prevent or remedy any violation. These regulations meet the minimum requirements as set forth by the State of Colorado through the Colorado Water Conservation Board and the National Flood Insurance Program.

12-2005.05 ABROGATION AND GREATER RESTRICTIONS

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

12-2005.06 INTERPRETATION

In the interpretation and application of these regulations, all provisions shall be:

- A. Considered as minimum requirements;

- B. Liberally construed in favor of the governing body; and,
- C. Deemed neither to limit nor repeal any other powers granted under State Statutes.

12-2005.07 WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by these regulations is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasion. Flood heights may be increased by man-made or natural causes. These regulations do not imply that land outside floodplains or special flood hazard areas or uses permitted within such areas will be free from flooding or flood damages. No part of these regulations shall create liability on the part of Arapahoe County, any officer or employee thereof, or the Federal Emergency Management Agency for any flood damages that result from reliance on these regulations or any administrative decision lawfully made thereunder.

12-2006 ADMINISTRATION

12-2006.01 DESIGNATION OF THE FLOODPLAIN ADMINISTRATOR

The Director of Public Works and Development (PWD), including his or her designee, is hereby appointed the Floodplain Administrator to administer and implement the Floodplain Management Regulations by granting or denying floodplain development permit applications in accordance with its provisions, and other appropriate sections of 44 CFR (National Flood Insurance Program Regulations). The Floodplain Administrator shall designate an alternate to perform the functions of the Administrator during any period of unavailability.

12-2006.02 DUTIES, RESPONSIBILITIES, AND AUTHORITY OF THE FLOODPLAIN ADMINISTRATOR

Duties of the Floodplain Administrator shall include, but not be limited to the following:

A. Permit Review.

1. Review all applications for development permits, including applications for building permits and the placement of manufactured homes, to determine if the proposed development will be reasonably safe from flooding.
2. Review, approve, or deny all floodplain development permits as required by these regulations.
3. Review all permits for proposed development to ensure that all necessary permits have been obtained from those Federal, State or local government agencies (including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334) from which prior approval is required.

B. Recordkeeping.

Maintain and hold open for public inspection all records pertaining to the provisions of these regulations.

C. Interpretation of Floodplain and Special Flood Hazard Area (SFHA) Boundaries.

Make interpretations, where needed, as to the location of the floodplain or SFHA boundaries (for example, where there appears to be a conflict between a mapped boundary and actual field conditions).

D. Responsibilities with Regard to Alterations of Watercourses.

1. Notify adjacent communities and the Colorado Water Conservation Board prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Emergency Management Agency (FEMA).

2. Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

E. Floodplain Information and Determination.

1. When base flood elevation data has not been provided in accordance with Section 12-2005.02, the Floodplain Administrator shall obtain, review and reasonably utilize any base flood elevation data and floodplain data available from a Federal, State, UDFCD or other source, to administer the provisions of Section 12-2007. If adequate data is not available, the Floodplain Administrator shall require the applicant to provide additional data, survey data, other information and/or studies for review. When a regulatory floodway has not been designated, the Floodplain Administrator shall require the applicant to provide a floodway analysis defined by using the cumulative effect of the proposed development combined with all other existing and anticipated development such that there will not be a rise in the base flood by more than one-half foot.

2. In cases where there are multiple studies or conflicting base flood elevation data, the data which is most protective of the floodplains and special flood hazard areas and which restricts development will be used.

F. Map Revisions.

1. Under the provisions of 44 CFR, Part 65, Section 12 of the National Flood Insurance Program regulations, Arapahoe County may approve certain development in the SFHA (A zones) on the Arapahoe County FIRM which increases the water surface elevation of the base flood by more than one-half foot, provided that the an application for a Conditional Letter of Map Revision (CLOMR) is submitted to and approved by FEMA prior to final County approvals.

2. Letters of Map Revision Based on Fill (LOMR-F). The lowest floor elevation for any construction of a new structure, redevelopment (substantial improvements) of an existing structure or addition to an existing structure on a property removed from the floodplain by issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F) will be required to meet the County's freeboard standards, i.e. two (2) feet above the Base Flood Elevation (BFE) that existed prior to the placement of fill.

G. Enforcement.

1. The Floodplain Administrator, working jointly with the Zoning Administrator, shall enforce the Floodplain Management Regulations and provisions for Flood Damage Prevention Standards.

2. In addition to the remedies available for enforcement of Zoning Violations, Arapahoe County shall be entitled to enforce these regulations by all legal and equitable means allowed by law, including injunctive relief.

H. Violations.

Whenever the Floodplain Administrator determines that a violation of these regulations has occurred, may occur, or is threatened, the Floodplain Administrator shall be responsible for placing a temporary or permanent hold on further development permits, approvals and actions (including building permits, rezoning actions, subdivision actions, grading permits, and the like) to the extent necessary to prevent or remedy the violation, and for notifying affected County departments of this action. The hold shall remain in place until the property owner complies with these regulations.

I. Variances.

The Floodplain Administrator shall process variance requests from the Floodplain Management Regulations in accordance with Section 12-2006.05

12-2006.03 FLOODPLAIN DETERMINATION

12-2006.03.01 Effective with the adoption of these regulations, all development (as defined in Section 19-200) shall be required to apply for a Floodplain Determination prior to beginning any work, for the sole purpose of determining whether, and the extent to which, the Floodplain Management Regulations restrict or regulate development on the applicant's property.

A. Development that requires a building permit shall obtain this determination from the Floodplain Administrator in connection with the building permit application process. This determination is coordinated by the Zoning Administrator.

B. All other development shall obtain this determination from the Floodplain Administrator.

C. All persons obtaining a Floodplain Determination shall pay the fee established by the Board of County Commissioners for that service in addition to other such fees as may be required in the processing of the particular development application.

12-2006.03.02 A Floodplain Determination is only intended to guide Arapahoe County in its application of the Floodplain Management Regulations and cannot be relied upon for any other purpose. Property owners who wish for a reliable determination of whether their property is affected by the floodplain or exposed to flood risks must obtain their own determination from licensed or qualified professionals. No County employees are authorized to make Floodplain Determinations which may be relied upon by any person for any purpose other than a determination of the extent to which the Floodplain Management Regulations shall restrict or regulate development on parcels of property.

12-2006.04 FLOODPLAIN DEVELOPMENT PERMIT REQUIREMENTS

All development (as defined in Section 19-200) proposed within floodplain or special flood hazard areas and all development constructed, installed, commenced, improved, or maintained within a floodplain or special flood hazard area (to the extent permitted by this LDC) is required to obtain a Floodplain Development Permit from the Floodplain Administrator before construction or development begins within any floodplain or special flood hazard area established in Section 12-2005.02.

12-2006.04.01 For any disturbance of the floodplain, a floodplain development permit shall be obtained from the Floodplain Administrator before start of construction or the beginning of development within any floodplain. The floodplain development permit is required prior to the issuance of building permit, street cut or right-of-way use permit, a grading permit, and any other development, use or change of the use of land in the floodplain. The Floodplain Development Permit is required in addition to other permits or review processes, which may be associated with the underlying zone district. All activities, regardless of impact, are required to be permitted.

12-2006.04.02 Sufficient information must be provided with an application for a floodplain development permit to determine the impact of the proposed activities within the floodplain or special flood hazard area. Refer to the Floodplain Chapter of the Stormwater Management Manual for the Floodplain Development Permit application requirements. These requirements are considered the minimum for each application, unless waived by the Floodplain Administrator.

12-2006.04.03 All necessary Federal, State and local permits shall be secured before the Floodplain Development Permit will be issued.

12-2006.05 VARIANCE PROCEDURES

12-2006.05.01 GENERAL

A. The Technical Review Committee (TRC) shall hear and decide appeals and requests for variances from the Floodplain Management Regulations, as defined in the Stormwater Management Manual. An appeal of the TRC's decision may be made to the Director of Public Works and Development. A final appeal may be made to the Board of County Commissioners, who shall have the final decision on all variance requests.

B. The Floodplain Administrator shall maintain a record of all actions involving an appeal and shall report variances, upon request, to FEMA.

C. 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 a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

D. Upon consideration of the factors noted above and the intent of the Floodplain Management Regulations, the TRC may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of these regulations.

E. Variances shall not be issued within any designated floodway, if any increase in flood levels would result during discharge of the base flood unless 44 CFR Part 65, Section 12 requirements are met or a County-approved Floodplain Modification study is obtained.

12-2006.05.02 PREREQUISITES FOR GRANTING VARIANCES

The prerequisites for granting variances include:

A. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

B. Variances shall only be issued upon:

1. Showing a good and sufficient cause;
2. A determination that failure to grant the variance would result in exceptional hardship to the applicant, and
3. A determination that the granting of a variance will not result in increased flood heights, unless:
 - a.) There is an approved Floodplain Modification Study or CLOMR that meets the standards of 44 CFR Part 65, Section 12;
 - b.) There are no additional threats to public safety;
 - c.) There will be no extraordinary public expense;
 - d.) The variance will not create a public nuisance;
 - e.) There is no fraud on or victimization of the public; or
 - f.) There is no conflict with other applicable laws or ordinances.

C. Any applicant to whom a variance is granted shall be given written notice of the consequence to the variance (e.g., increase in flood insurance premium requirements, FEMA map revision, and/or requirement to obtain easements from other property owners.)

D. Variances may be issued for construction of replacement structures and substantial improvements or damage repairs in floodplains or the SFHA, and for other development necessary for the conduct of a functionally dependent use provided that:

1. The regulations outlined above in Section 12-2006.05.01 of the Variance Procedures are met.
2. The structure or other development is protected by methods that minimize flood damages (e.g. freeboard requirements) during the base flood and create no additional threats to public safety.
3. For requests of substantial improvement/damage to existing structures in floodplain or SFHA, there is no increase in footprint from the existing structure.
4. No new additional habitable structures are placed within the floodplain or SFHA.

5. For requests of substantial improvement/damage to existing structures in the floodplain or SFHA, the footprint of the replacement structure is not located in the floodway, and if relocated is relocated as far out of the floodplain or SFHA as the lot configuration allows.

12-2006.05.03 STANDARDS FOR FLOODPLAIN VARIANCES

The TRC shall interpret these regulations in a way that strongly discourages filling within the flood fringe. The TRC shall consider all technical and scientific evaluations, the Provisions for Flood Damage Prevention specified in Section 12-2007, and the following relevant factors:

- A. The danger to life and property due to flooding or erosion damage;
- B. The danger that materials may be swept onto other lands to the injury of others;
- C. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
- D. The safety of access to the property in times of flood for ordinary and emergency vehicles;
- E. The compatibility of the proposed use with existing and anticipated development;
- F. The importance of the services provided by the proposed facility to the community;
- G. The relationship of the proposed use to the Comprehensive Plan and floodplain management program for that area;
- H. The availability of alternative locations for the proposed use that is not subject to flooding or erosion damage;
- I. The necessity to the facility of a waterfront location, where applicable.
- J. The impacts of such requests on other properties; and
- K. In the case of substantial improvements/damage, and repairs to existing structures, the continued reasonable economic use of the property.

12-2007 PROVISIONS FOR FLOOD HAZARD REDUCTION

12-2007.01 SPECIFIC STANDARDS

In all floodplains and special flood hazard areas as established in Section 12-2005.02 of these regulations, including shallow flooding areas (AO and AH Zones), the following provisions are required:

- A. Prohibit all new construction of structures, including residential, non-residential, or recreational.
- B. Prohibit new construction of critical facilities.
- C. Prohibit additions to existing structures.
- D. Prohibit fencing, including solid or perforated wood; split rail; chain link; stone, brick or other materials. Three-strand barbed wire may be permitted in rural areas on a case-by-case basis.
- E. Prohibit detention or water quality ponds not part of a regional, or County or UDFCD approved drainage Master Plan.
- F. Prohibit new construction of streets (local and collector streets may be approved on a case by case basis provided alternate access is available and street depth criteria are met).
- G. Prohibit permanent toilet facilities.
- H. Prohibit new construction of structures, ponds, or appurtenances related to water and wastewater treatment facilities.
- I. Prohibit vehicle parking lots not associated with an approved floodplain use.
- J. New construction of landscaping walls or structural walls that extend or flatten land that result in floodplain encroachment.
- K. Prohibit the storage or processing of materials, which are buoyant, flammable, explosive, or could cause injury to humans, animals, or plants. Prohibit the storage, processing of materials, or any other activity that may have an adverse impact on water quality. These materials represent a

significant potential public health, environmental, or safety risk. Floatable materials can also be come lodged in culverts, bridges, and channels resulting in increased damages resulting from increased flood depths or diversion of flood waters. Temporary storage of construction-related vehicles and materials may be permitted, depending upon location and type of material storage. Prohibit the storage of any material in the floodway, unless permitted by the Floodplain Administrator..

- L. Prohibit any use in the floodplain that has the potential for the following to occur:
1. Obstruction of the flood water flow so that the floodplain is altered in elevation in excess of the allowable criteria (unless approved through a floodplain modification study).
 2. Reduction in the carrying capacity of the channel (unless approved through a floodplain modification study).
 3. Potential for material, equipment, or facilities to become dislodged or displaced and to be deposited downstream causing channel or drainageway, culvert or bridge blockage, channel degradation, or damages to other properties.
 4. Potential for negatively impacting water quality.

M. Performance standards for use of floodplains shall include the following:

1. No floodplain use shall adversely affect the efficiency of, or unduly restrict the capacity of, the channels or floodplains of the mainstreams or any tributaries to the mainstream, drainage ditches, or any other drainage facilities or systems; or
2. No structure (temporary or permanent), fill (including fill for roads and levees), deposits, obstruction, storage of materials, or other floodplain uses which, acting alone or in combination with existing or future floodplain uses, adversely affects the efficiency or the capacity of the floodplain, or which adversely affects the storage capacity of the floodplain. Impervious surfaces in the floodplain shall be minimized. Proposed impervious surfaces in the floodplain are subject to approval by the Engineering Services Division with respect to generated storm water runoff.

N. Flood control or stream stability projects associated with County and UDFCD approved master plans may be permitted, provided that the Floodplain Development Permit requirements of Section 12-2006.04 are met.

O. The Floodplain Administrator may impose conditions on approval of floodplain development permits to achieve compliance with the Provisions of Flood Hazard Reduction, which conditions may include modification of proposed systems and facilities and imposition of operational controls and limitations on periods and conditions of use and operation. Additionally, a map revision process may be required prior to permit approval.

P. A Floodplain Modification Study is required when development or other activities are proposed that require modification of, or construction in the floodplain or special flood hazard areas, as established in Section 12-2005.02, or when proposals involve use of property within the floodplain or special flood hazard area, as established in Section 12-2005.02. The Floodplain Modification Study requirements are identified in the Floodplain Chapter of the Stormwater Management Manual.

Q. Building Permits.

1. All necessary local, State and Federal permits shall be secured before building permits will be issued by Arapahoe County.
2. At the time of issuance of building permits, the applicant shall certify to the PWD Building Division that the proposed structure is outside of any floodplain or special flood hazard area, as established in Section 12-2005.02.

12-2007.02 SUBDIVISION PROPOSAL STANDARDS

All subdivision proposals will be reviewed to determine whether the subdivision will be reasonably safe from flooding. The following regulations in conjunction with the requirements of the Floodplain Chapter of the Stormwater Management Manual shall apply to all subdivision proposals within or adjacent to floodplain or special flood hazard areas:

A. **Minimize Flood Damage.** All subdivision applications, including the placement of manufactured home parks and subdivisions, shall be consistent with the need to minimize flood damage. In general, platted lots must be located outside of the 100-year floodplain limits.

B. **Floodplain Development Permit.** All subdivision applications, including the placement of manufactured home parks and subdivisions, shall meet the permit requirements of Section 12-2006.04 of these regulations.

C. **Base Flood.** The applicant shall be responsible for generating any base flood data and survey data requested by the Floodplain Administrator relating to the site and proposed development. In cases where there is conflicting base flood elevation data, the data which is most protective of the floodplain or special flood hazard area will be used.

D. **Drainage.** All subdivisions, including manufactured home parks and subdivisions, shall have adequate drainage provided to reduce exposure to flood hazards.

E. **Protection of Utilities.** All subdivision applications, including the placement of manufactured home parks and subdivisions, shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.

F. **Floodplain Areas.** Floodplain boundaries must be considered in subdivision layout, where applicable, and as further defined in the Floodplain Chapter of the Arapahoe County Stormwater Management Manual. In general, platted lots must be located outside of the floodplain or special flood hazard area limits. An exception is made for zoning districts where residential lots exceed 2.5 acres, in which case lots may be platted within the floodplain or special flood hazard area limits, provided a floodplain easement and building envelopes are established. When the floodplain boundary accurately represents the proposed floodplain limits, lots can be platted as described in this subsection. There are many cases, however, where the SFHA or mapped floodplain was delineated using approximate methods or where improvements are proposed to confine the floodplain. In this case, platted lots must be outside the SFHA or mapped floodplain or the actual floodplain, whichever is more restrictive.

G. **Proposed Subdivision Lots Removed from or adjacent to Floodplains.** This subsection applies to subdivisions where any proposed lots are required to be removed from the floodplain or special flood hazard area or where any proposed lots are adjacent to the floodplain. In either such case, an approved CLOMR or Floodplain Modification Study will be required prior to County approval of a final plat. A plat restriction shall prohibit the issuance of building permits on the affected lots until a LOMR or LOMA has been issued by FEMA and the appeal period has expired or a similar map change process has been approved by the County for non-FEMA mapped floodplains.

H. **Freeboard.** All subdivision applications will be subject to the freeboard requirement in accordance with Section 12-2007.03 of these regulations and the Floodplain Chapter of the Stormwater Management Manual. Basements in structures on lots directly adjacent to a floodplain or special flood hazard area will be required to have two feet of freeboard above the BFE.

12-2007.03 FREEBOARD

A minimum clearance, or freeboard, shall be provided between the floodplain or special flood hazard area and structures, and other applicable facilities, which may be impacted by or adjacent to the floodplain. Freeboard is required to allow for uncertainty in the floodplain modeling, changes to the drainageway (i.e. increased invert due to sedimentation), and to provide an additional factor of safety (buffer) for structures and facilities which would experience damages or hazards during inundations.

A. The County requires a minimum of two-feet of freeboard between the 100-year water surface elevation and the lowest floor elevation (including basement) of all substantially improved structures within the floodplain or special flood hazard area (including critical facilities) or structures adjacent to the floodplain or the special flood hazard area.

B. For facilities which are not structures (typically not requiring a building permit) such as roadways, utility cabinets, parks and trail improvements, a minimum of one foot of freeboard is acceptable.

C. Shallow flooding areas (AO and AH Zones) or areas adjacent to shall have the lowest floor (including basement) elevated two feet above the highest adjacent grade or two feet above the depth number specified on the Arapahoe County FIRM (at least four feet if no depth is specified on the FIRM).

D. A registered Colorado professional engineer or land surveyor shall submit an Elevation Certificate to the Floodplain Administrator to certify that standards of this section and Section 12-2007.08(B.) are satisfied.

12-2007.04 FLOODWAYS

The floodway (as defined in Section 19-200) is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and has erosion potential. Floodways are located within special flood hazard areas established in Section 12-2005.02. The County has adopted a one-half foot floodway requirement. For special flood hazard areas which have a designated floodway, the following provisions apply:

A. Development is prohibited, including fill, new construction, and other development within the adopted regulatory floodway unless certification by a Colorado registered professional engineer is provided demonstrating that encroachment shall not result in any increase in flood levels (no rise) during the occurrence of the base flood discharge, or otherwise alter the floodway in a manner which will constrict the channel or increase erosion potential unless a FEMA-approved CLOMR that addresses the 44 CFR Part 65, Section 12 requirements or a County-approved Floodplain Modification Study are obtained.

B. If Section 12.-2007.04(A.) above is satisfied, all new construction shall comply with all applicable Flood Hazard Reduction Provisions of Section 12-2007.

C. For all floodplain and special flood hazard areas in which a regulatory floodway has not been designated, encroachments that would result in an increase of the base flood elevations more than one-half foot are prohibited, unless the provisions of 44 CFR Part 65, Section 12 are met, and until a regulatory floodway is designated.

D. For LOMRs on special flood hazard areas where the effective FIRM shows a 1.0 foot floodway, the one-half foot floodway will not be required until the entire drainageway is remapped at which time the revised map will show a one-half foot floodway.

12-2007.05 FLOOD FRINGE ENCROACHMENT (FILLING)

The floodplain fringe is the portion of the 100-year floodplain that is not within (outside of) the regulatory floodway. Floodplain fringe filling reduces or eliminates valuable floodplain storage areas and the cumulative effect can have significant impacts on downstream properties. Reduction of floodplain storage areas can increase peak flow rates and associated base flood elevations downstream, even though there may be little impact at the site where the fill occurs. This practice may be contrary to the County's objective of precluding damage to life and property and is contrary to the County's objective of maintaining floodplains as open space. Encroachment in the flood fringe is only allowed for approved uses listed in Section 12-2007.01. For proposals considering flood fringe encroachment, the Floodplain Administrator shall consider the requirements of the Floodplain Chapter of the Stormwater Management Manual, as a minimum, and the following:

A. Encroachment of the floodplain fringe is strongly discouraged and will only be considered on a case by case basis.

B. The one-half foot floodway requirement is cumulative, and all proposals considering encroachment in the fringe, must consider the total cumulative impact based on historical and future encroachment on both sides of the drainageway.

C. When floodplain encroachment is allowed, a Floodplain Modification Study, or CLOMR, in accordance to the Floodplain Chapter of the Stormwater Management Manual and consistent with the scope of work shall be provided.

- D. A Floodplain Development Permit shall not be issued for the construction of a new structure, redevelopment (substantial improvements) of an existing structure or addition to an existing structure on a property removed from the floodplain by issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F), where the lowest floor elevation is placed below the Base Flood Elevation (BFE). For this situation, the lowest floor elevation must be two feet above the BFE (Freeboard) that existed prior to the placement of fill to receive an approved Floodplain Development Permit.
- E. If the development does not maintain equivalent flood fringe and floodway volumes, the County may not support the proposal.

12-2007.06 UTILITIES

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

12-2007.07 RECREATIONAL VEHICLES

The following standards are required for recreational vehicles placed on sites in floodplains or special flood hazard areas as established in Section 12-2005.02:

- A. Shall be located on-site for fewer than 180 consecutive days; or
- B. Shall 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.

12-2007.08 EXISTING STRUCTURES IN FLOODPLAINS OR SPECIAL FLOOD HAZARD AREAS

The construction standards contained in this Section shall apply only to substantial improvements or minor remodeling improvements (hereinafter referred to as “improvements”) of existing legal, non-conforming structures, and to other development as permitted by the Floodplain Administrator. All uses of property in a floodplain or special flood hazard area shall comply with applicable floodplain regulations contained in this Code. It is the intent of the County that no new permanent structures be constructed in a floodplain or special flood hazard area and that all such existing legal, non-conforming uses cease upon obsolescence of existing non-conforming structures or be improved to meet the criteria set forth below.

A. **General.** The following provisions are required:

1. Improvements are permitted for existing structures in the flood fringe but not in the floodway, provided those improvements meet the freeboard criteria in Section 12-2007.03 and do not increase the footprint of the structure.
2. Improvements shall be designed (or modified) and adequately anchored to prevent floatation collapse or lateral movement of the improvement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
3. Improvements shall be constructed by methods and practices that minimize flood damage.
4. Improvements shall be constructed with materials resistant to flood damage.
5. Improvements shall be constructed 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.

B. **Floodplain Development Permit Requirements.** In addition to the permit requirements described in Section 12-2006.04 of these regulations, the following information is required, unless waived by the Floodplain Administrator:

1. Elevation based on NAVD 88 (in relation to the mean sea level) of the lowest floor (including basement) of all substantially-improved structures;
2. Elevation based on NAVD 88 (in relation to the mean sea level) to which any non-residential structure shall be floodproofed;
3. A certificate from a registered professional engineer or architect that the non-residential floodproofed structure shall meet the floodproofing criteria of Section 12-2007.08(D.).
4. Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of proposed development.
5. Maintain a record of all such information in accordance with Section 12-2006.02(B.)(1.).

C. Residential Construction. Substantial improvement of any residential structure in the floodplain or special flood hazard area shall have the lowest floor (including basement) elevated to or above the minimum freeboard requirement of two feet, described in Section 12-2007.03. A registered Colorado Professional Engineer or land surveyor shall submit certification (Elevation Certificate) to the Floodplain Administrator that the standard of the section above, Section 12-2007.08(B.), has been satisfied.

D. Non-Residential Construction. Substantial improvement of any commercial, industrial, or other non-residential structure in the floodplain or special flood hazard area, shall either:

1. Have the lowest floor (including basement) elevated to or above the minimum freeboard requirement of two feet, as described in Section 12-2007.03, or
2. Together with attendant utility and sanitary facilities, shall be floodproofed so that below the base flood level plus two feet of freeboard, the structure is watertight with walls substantially impermeable to the passage of water, and have structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and
3. A registered Colorado Professional Engineer or architect shall provide certification that the design and methods of construction are in accordance with accepted standards of practice as outlined in this Section. The Floodplain Administrator shall keep records of these certifications (Floodproofing Certification).

E. Enclosures. Improvements with fully enclosed areas below the lowest floor that are used solely for parking or vehicles, building access or storage in an area other than a basement 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 either be certified by a registered Colorado Professional Engineer or architect or must meet or exceed the following minimum criteria:

1. A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.
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 automatic entry and exit of floodwaters.

F. Manufactured Homes. Substantially-improved manufactured homes in an existing manufactured home park or subdivision, shall be elevated on a permanent foundation such that the lowest floor of the manufactured home (including basement) is elevated to or above the minimum freeboard requirement of two feet, as specified in Section 12-2007.03, and be securely anchored to an adequately anchored foundation system to resist floatation, collapse, and lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces. A registered professional engineer or architect shall provide certification to the Floodplain Administrator that the standard of this section and Section 12-2007.08(B.) are satisfied. In addition, the following specific requirements shall be met:

1. Over-the-top ties must be provided at each of the four (4) corners of the manufactured home, with two (2) additional ties per side at intermediate locations, with manufactured homes less than fifty (50) feet long requiring one additional tie per side;

2. Frame ties must be provided at each corner of the home with five (5) additional ties per side at intermediate points, with manufactured homes less than fifty (50) feet long requiring four (4) additional ties per side; and
3. All components of the anchoring system must be capable of carrying a force of four thousand eight hundred (4,800) pounds.

G. Shallow Flooding Areas (AO and AH Zones) Standards

Areas designated as shallow flooding are located within special flood hazard areas, as established in Section 12-2005.02. These areas have special flood hazards associated with base flood depths of one to three feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow. For areas of shallow flooding, the following provisions apply:

1. Substantial improvements to residential or non-residential structures, shall have the lowest floor (including basement) elevated above the highest adjacent grade plus two feet above the depth number specified in feet on the Arapahoe County FIRM (at least four feet if no depth number is specified.).
2. Adequate drainage paths are required around the structures on slopes to guide flood waters around and away from proposed structures.
3. A registered professional engineer or land surveyor shall submit a certification to the Floodplain Administrator that the standards of Section 12-2007.08(B.) are satisfied.

12-2007.09 CRITICAL FACILITIES

The following standards apply to all critical facilities, as defined in Section 19-200, located in or adjacent to floodplains and special flood hazard areas.

- A. **Protection of Critical Facilities.** The following provisions are required:
 1. New construction of critical facilities shall be located outside the floodplain or special flood hazard area, at a minimum. Placement of new critical facilities within the 500-year floodplain is discouraged. The 500-year floodplain mapping shall be based upon the best available information, including floodplain studies produced by FEMA, UDFCD, CWCB, or other studies as approved by the County and accepted by the appropriate local, regional, state or federal agencies.
 2. Change of use of a structure to a critical facility or substantial improvement of an existing critical facility in the floodplain shall include elevation of the lowest floor or flood-proofing of the structure, together with attendant utility and sanitary facilities, to at least two feet above the Base Flood Elevation. Additionally, no increase in the footprint of the existing facility shall be allowed.
- B. **Ingress and egress for new critical facilities.** New construction of critical facilities, change of use of a structure to a critical facility, or substantial improvements of existing critical facilities shall, when practicable as determined by the County, have continuous non-inundated access (ingress and egress for evacuation and emergency services) during a 100-year flood event.