

DC-15-0004

EXHIBIT D

Proposed new floodplain regulations (28 Sep 2016)

4-400 Floodplain Overlay District

4-401 Purpose

- A. To provide land use controls necessary to qualify unincorporated areas of Boulder County for flood insurance under requirements of the National Flood Insurance Act of 1968, as amended; to protect life, property, and health; to ensure the best available data is used in making development decisions; to avoid increasing flood levels or flood hazards or creating new flood hazard areas; to minimize public and private losses due to flooding; to reduce the need for expenditures of public money for flood control projects; to reduce the need for rescue and relief efforts associated with flooding; to prevent or minimize damage to public infrastructure, facilities, and utilities; and to meet or exceed FEMA and CWCB minimum standards for floodplain regulation.
- B. FEMA requires all communities that participate in the National Flood Insurance Program (“NFIP”) regulate “Development” that occurs within the Special Flood Hazard Area. FEMA defines Development as “any manmade change to improved and unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavating or drilling operations.”

4-402 Applicability and Administration

- A. **Applicability.** The Article 4-400 applies to all lands in the Floodplain Overlay (“FO”) District. If a lot or other parcel of land lies partly within the FO District, this Article 4-400 applies to the part of such lot or parcel lying within the district. If a building or structure lies partly within the FO District, then this Article 4-400 applies to the entire building or structure.
- B. **County Engineer Role.** The County Engineer or his or her designee is responsible for the administration and implementation of the requirements of the FO District, including reviewing all development proposals to determine the applicability of this section, all Individual Floodplain Development Permit (“Individual FDP”) applications, and all notifications submitted for General Floodplain Development Permit (“General FDP”) consideration.
- C. **No Liability.** The degree of flood protection provided by this section has been determined to be reasonable for regulatory purposes and is based on engineering and scientific methods of study of the 1%-annual-chance (100-year) flood event, also referred to as the base flood. Floods of greater magnitude may occur. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge or culvert openings restricted by debris. This Article 4-400 does not imply that land areas outside of 100-year floodplain boundaries or land uses permitted within such areas will be free from flooding or flood damages, or that compliance with these regulations will prevent flood damage. Neither Boulder County nor any of its officers or employees shall be liable for any flood damages, including any damages that result from reliance on this article or any administrative decision.

D. More Restrictive Prevails.

1. The Federal Emergency Management Agency (“FEMA”) and the Colorado Water Conservation Board (“CWCB”) have established certain minimum standards for regulatory floodplains. To the extent a FEMA or CWCB requirement conflicts with a provision in 4-400, the most restrictive controls.
2. This Article 4-400 does not repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. Where this Article 4-400 and another ordinance, easement, covenant, or deed restriction conflict or overlap, the more restrictive applies.

E. Permits Required.

1. All development in the FO District requires an Individual FDP or must be covered by the General FDP. Development in the FO District not covered by a General FDP or an Individual FDP may result in enforcement action under Article 17.
2. In addition to the Floodplain Development Permits required by this section, all required local, state, and federal permits must be issued prior to development in the FO District.

F. Referral from Other County Departments.

1. All development that requires a planning review process through the Boulder County Land Use Department and may be susceptible to flooding will be forwarded to the County Engineer for review and comment. The County Engineer must determine if the work is covered under a General FDP, requires an Individual FDP, or does not require any type of Floodplain Development Permit. Where the County Engineer indicates that the development will need a Floodplain Development Permit, the Land Use Department should note the requirement on any planning approval.
2. All building permit applications shall be reviewed by the Building Division to determine whether the proposed development is potentially within the FO District and therefore may require a Floodplain Development Permit. If it appears to the Chief Building Official that any proposed development may be within the FO District, then the Chief Building Official shall refer the application to the County Engineer. The Chief Building Official shall not issue a building permit when floodplain issues have been raised unless the County Engineer has confirmed the development is approved under a General FDP or an Individual FDP or the County Engineer has determined that a Floodplain Development Permit is required.
3. All Onsite Wastewater Treatment System (“OWTS”) applications will be reviewed by Boulder County Public Health Department (“Public Health”) to determine whether the work, including new OWTS or repair/replacement of an existing OWTS, may be within the FO District. If it appears to Public Health that the proposed work may be within the FO District, then Public Health must refer the application to the County Engineer. Public Health must not issue an OWTS permit when floodplain issues have been raised unless the County Engineer has issued an Individual FDP or has determined that no such permit is required.

4-403 FO District Defined; Official Map

- A. **FO District.** The Boulder County FO District is defined as the FEMA Floodplain together with the Boulder County Floodplain, as those floodplains are defined below.
1. The December 18, 2012 Digital Flood Insurance Rate Map (“DFIRM”) and Flood Insurance Study (“FIS”) report published by FEMA, as amended, is incorporated by reference. The DFIRM and FIS in effect on the date of a property owner’s complete application for any permit or process in this Code, in particular those portions of the DFIRM and FIS that define the 100-year floodplain, is the foundational floodplain for the FO District (the “FEMA Floodplain”). The term “DFIRM” includes all flood risk zone designations and technical information displayed on the maps, explanatory matter, technical addenda, modeling and calculations, water surface elevations, profiles, and cross sections, and other underlying detailed study data, such as information published in the FIS report and supporting documentation, as well as approved Letters of Map Revision (“LOMR”), Letters of Map Amendment (“LOMA”), and Letters of Map Revision based on Fill (“LOMR-F”). The FEMA Floodplain includes Zone AE, A, AH, and AO flood risk zone designations, including both Floodway and Flood Fringe areas.
 2. To augment the FEMA Floodplain, the Board of County Commissioners may, after review and recommendation by the Planning Commission, adopt a “Boulder County Floodplain.” The purpose of adopting a Boulder County Floodplain is to facilitate use of the best data available to the County to establish floodplain boundaries, Base Flood Elevations (“BFE”), and Flood Protection Elevations (“FPE”) to better protect residents of the County from flood hazards.
 - a. The Boulder County Floodplain must be comprised of the same flood risk zone designations as the FEMA Floodplain.
 - b. In no instance may the Boulder County Floodplain remove from the FO District an area or property designated as within the FO District by the FEMA Floodplain.
 - c. The following reports, maps, and related information constitutes the initial location and boundaries of the current Boulder County Floodplain:
 - (i) Floodplain Re-analysis and Floodway Delineation, North St. Vrain and St. Vrain Creeks, Boulder County, CO, by Love & Associates, Inc., October, 1992; and
 - (ii) Any area included in the definition of Floodway per Section 4-414.
 - d. The maps in these reports, as well as the area described in the Floodway definition, depicting the floodplain for the base flood shall be considered the official maps for the purposes of locating the Boulder County Floodplain on the official zoning district maps. These maps and reports, together with all amendments, explanatory matter, technical addenda, water surface elevations, profiles and cross sections (where available) are incorporated by reference into this Code.

3. All records pertaining to floodplain development must be on file with the County and open to public inspection. These records include, but are not limited to, certified Lowest Floor Elevations, Elevation Certificates, commercial Floodproofing Certificates, LOMAs, LOMR-Fs, LOMRs, Floodplain Development Permits, boundary interpretations, and records of action on variance requests.
- B. Official Map.** The County Engineer shall maintain digital maps delineating the location and boundaries of the FEMA Floodplain and the Boulder County Floodplain. The FEMA Floodplain map shall depict in plan view the horizontal boundary of the flood hazards described in the underlying flood studies, as published by FEMA. The Boulder County Floodplain map shall depict in plan view the horizontal boundary of the flood hazards described in the underlying flood studies, as adopted by Boulder County. These maps of the FEMA Floodplain and the Boulder County Floodplain together establish the areas governed by the provisions of this Article 4-400 and constitute the Official Map of Boulder County’s FO District (“Official Map”).
1. The most current Official Map and supporting data shall be on file in the County Engineer’s Office in electronic format, available for public inspection during normal business hours, with electronic and paper copies available upon request. The Official Map must also be available to the public on the Boulder County website.
 2. The County Engineer shall maintain records of superseded versions of the Official Map for historical reference.
- C. Interpretation of Official Maps**
1. The County Engineer shall determine which uses, parcels, structures, or other facilities are located in a previously adopted FEMA Floodplain or a Boulder County Floodplain, including in situations where a mapped boundary appears to conflict with actual field conditions. In making such interpretations, the County Engineer shall refer, as necessary, to the best available data at that time.
 2. Sources of best available data for interpretations include the engineering study upon which the maps and elevations are based, the professional engineers who prepared the study, the most recent detailed terrain data certified by a P.E. or a P.L.S., survey data certified by a P.E. or a P.L.S., any BFE/water surface elevation, floodway, and other flood risk data available from state or federal agencies, and any other reliable source that the County Engineer finds meets an acceptable level of technical accuracy as determined through prevailing industry practices.
 3. The use of aerial photography to interpret FO District boundaries, but without the consideration of local terrain data, shall be for informational purposes only, and not for making determinations as to the exact location of the boundaries of the FO District.
 4. If the County Engineer makes a determination regarding the relationship of the Official Map to a use, parcel, structure, or other facility, the interpretation must be

noted in the records associated with any related permit(s) and available for public inspection.

5. The Engineer’s determinations under this section are interpretations of precisely where the existing regulatory boundary lies on the ground. A determination as to which uses, parcels, structures, or other facilities are located in or out of a previously adopted FEMA Floodplain or a Boulder County Floodplain does not itself contract or expand the boundaries of the FO District. Therefore, such determinations do not result in an amendment to the Official Map that requires review and approval by the Planning Commission and Board of County Commissioners.

D. Amendment of Official Map

1. The FEMA Floodplain within the FO District will be deemed updated when FEMA issues a Letter of Final Determination associated with any map action, or after the effective date of any Letter of Map Change (“LOMC”), without need for review or approval by the Planning Commission or the Board of County Commissioners, regardless of how many parcels are affected.
 - a. If FEMA provides notice of final BFEs and sets an effective FIRM revision date (through issuance of a Letter of Final Determination) for studies that had previously been adopted as Boulder County Floodplain, the following rules apply:
 - (i) If FEMA made no changes to the studies previously adopted by Boulder County, then from the effective date of FEMA’s map action forward, Boulder County will continue to regulate using those studies to partially define the FO District, but will treat the studies as FEMA Floodplain rather than Boulder County Floodplain. In this circumstance, the County Engineer is not required to obtain review and approval of Planning Commission or the Board of County Commissioners.
 - (ii) If prior to its official action FEMA makes changes to maps, data, or related documentation previously included only in the Boulder County Floodplain, the County Engineer must determine whether and how the Boulder County Floodplain should be amended.
2. Except for an automatically adopted DFIRM update, a change in the boundary of the FO District requires review by the Planning Commission and approval by the Board of County Commissioners of a Zoning Map Amendment in accordance with Section 4-1100. The County Engineer shall revise the Official Map upon approval of changes to the Official Map by the Board of County Commissioners.
3. If a property owner in the FO District believes that the provisions of this Section should not apply to some or all of the property owner’s property because the building or ground elevations are above the corresponding BFE, then (1) as to the Boulder County Floodplain, the owner may request a rezoning map amendment under the procedures of 4-1100, and (2) as to the FEMA Floodplain, the owner

may request FEMA approve a LOMA. LOMAs must be provided to the County Engineer.

4. The County Engineer may correct clerical errors in the Official Map as they are discovered, without need for approval by the Planning Commission or the Board of County Commissioners, regardless of how many parcels are affected.
5. The County Engineer may generate or receive draft and/or preliminary flood risk analyses and reports affecting the FO District. These analyses may be any flood risk analyses, including those designated by CWCB or distributed by FEMA, as well as any other water surface elevation and/or Floodway data available from state or federal agencies or any other reliable source. Upon notification of such new information, the County Engineer shall evaluate whether a change to the boundaries of the FO District is required. If so, the County Engineer will submit a proposed Zoning Map Amendment to Planning Commission and the Board of County Commissioners for review and approval.
6. In accordance with 44 C.F.R. § 65.3 and the Rules and Regulations for Regulatory Floodplains in Colorado (the “CO Floodplain Rules”), project proponents must submit technical data to FEMA in the form of a map revision request within six months of the date of completion of a project if the project received a CLOMR from FEMA before construction or results in changes (either increases or decreases) in the 100-year water surface elevation greater than 0.3 foot.
7. The County Engineer will monitor large-scale natural physical changes as they occur. If the County Engineer deems it necessary to restudy a mapped floodplain or floodway as a result of such changes, the County Engineer shall coordinate with CWCB and FEMA and, as appropriate, submit a proposed Zoning Map Amendment to Planning Commission and the Board of County Commissioners for review and approval.

4-404 Floodplain Development Permits

- A. **Minimum Federal and State Standards.** Development in the FO District must comply with the NFIP and State of Colorado minimum standards. These standards require applicants to demonstrate that development projects in the Floodway, when combined with all other existing and anticipated development, will not cause an increase in the modeled 1%-annual-chance water surface greater than 0.00 feet and, for projects in the Flood Fringe, will not cause an increase greater than 0.50 feet.
- B. **Uses Prohibited in Floodway.** The following activities and uses are prohibited within all mapped Floodways:
1. Construction of new permanent buildings (either residential or non-residential) with the exception of relocated nonconforming uses otherwise permitted by this Article 4-400;
 2. Construction of new temporary buildings (either residential or non-residential), unless the County Engineer reviews and approves a specific location in the Floodway in conjunction with a Special Event as defined in the Multimodal Transportation Standards, a Group Gathering / Special Event as defined in the Land Use Code, or another temporary activity permitted by county regulations;
 3. Construction of additions to existing buildings that increase the building's square footage, footprint, or Habitable Space;
 4. Conversion of existing accessory use space to living or primary use space;
 5. Overnight campgrounds;
 6. Dispersed camping, unless the camping is approved through the issuance of a Group Gathering / Special Event Permit as defined in the Land Use Code;
 7. Parking of Recreational Vehicles for the purposes of overnight habitation;
 8. Storing or processing of materials that are buoyant, flammable, explosive, or otherwise potentially injurious to human, animal or plant life;
 9. Solid waste disposal sites and central collection sewage treatment facilities;
 10. New or expanded individual on-site wastewater systems, unless the expanded system is required to bring existing buildings up to code or is allowed per 4-405(G)(4);
 11. Solid wood fences, chain link fences, or any fence that does not meet the Boulder County standards for fence installation;
 12. Any activity or use that would create significant potential for downstream solid debris (including, but not limited to decks) waste, or rubbish;
 13. New or expanded Critical Facilities located on land lower than 6,000 feet in elevation; and
 14. Any encroachment (including filling and grading) that would adversely affect the efficiency of the Floodway or change the direction of flow, unless it conforms with section 4-404(C).

C. Uses Allowed in Floodway under Certain Conditions.

1. The County Engineer may issue FDPs for the following development types and open uses within the Floodway unless the use (1) is prohibited in the underlying zoning district, (2) adversely affects the efficiency of the Floodway, (3) changes the direction of flow, or (4) poses a significant safety hazard:
 - a. Agricultural uses involving the production, harvesting, storage, drying, or raising of agricultural commodities, including the raising and grazing of livestock and horses, as well as temporary buildings associated with such use, as detailed in 4-405(C)(3)(c);
 - b. Uses accessory to residential uses, including, but not limited to lawns, open areas, gardens, driveways, and play areas;
 - c. Industrial or commercial uses such as loading areas, railroad rights-of-way (but not including freight yards or switching, storage, or industrial sidings), parking areas, and airport landing strips;
 - d. Recreational uses not requiring permanent or temporary buildings designed as habitable space, unless a special event permit has been issued for a temporary building;
 - e. Utility facilities such as dams, power plants, spillways, transmission lines, pipelines, water monitoring devices, water supply ditches, irrigation ditches and laterals, and open mining;
 - f. Hydraulic structures such as bridges, culverts, weirs, diversions, drop structures, and fish ladders, for access and flood or stormwater control; and
 - g. Critical Facilities above 6,000 feet in elevation, as described in 4-405(D).
2. In addition, the County Engineer may not issue FDPs for the development types and uses listed in 4-404(C)(1) above that result in an encroachment within the Floodway unless the applicant has demonstrated through hydrologic and hydraulic analyses performed by a qualified P.E. licensed in Colorado and in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the Base Flood (a No-Rise Certification).
 - a. Under the provisions of 44 CFR Chapter 1, Section 65.12, of the NFIP Regulations, a community may permit encroachments within the adopted FEMA regulatory Floodway that would result in an increase in BFEs if the applicant first receives an approved CLOMR and/or Floodway revision from FEMA.
 - b. Where there is a designated FEMA Floodplain but no designated FEMA Floodway, and there is a designated County Floodway, projects that result in increases greater than 0.5 foot in these areas must first receive an approved CLOMR from FEMA, and projects that result in increases between 0.0 and 0.5 foot in these areas must first receive an approved Boulder County Floodway Review from the County Engineer.

- c. Where there is no designated FEMA Floodplain, but there is a designated County Floodway, projects that result in any increase in these areas must first receive an approved Boulder County Floodway Review from the County Engineer.
 - d. Where there is a designated FEMA Floodplain, and no FEMA or County Floodway, projects that result in increases greater than 0.5 foot must first receive an approved CLOMR from FEMA.
 - e. Where there is no designated FEMA Floodplain, but there is a designated County Floodplain (but not a County Floodway), the procedure set forth in 4-404.2(E) (Procedures for Modeling Proposed Development within the Floodway) must be followed.
 - f. For all new subdivision proposals and other developments (including, but not limited to, manufactured home parks) greater than either 50 lots or 5 acres that are located in Zone A, this analysis must also depict, as a part of the development proposal, the BFEs that Boulder County will use to determine FPEs for the proposed development.
 - g. In all instances, no increases in water surface elevation will be allowed that impact an insurable building.
 - h. Following project completion, the County Engineer shall provide FEMA with all information required by 44 C.F.R. Part 65 relating to water surface elevation changes so that FEMA may determine whether a map revision is appropriate.
- D. Uses Allowed in Flood Fringe under Certain Conditions.** Any use permitted by the underlying zoning regulations may be permitted in the Flood Fringe, provided the use meets the flood protection requirements of Section 4-405, and provided that:
1. New Critical Facilities are prohibited in the Flood Fringe below 6,000 feet (NAVD88) in elevation.
 2. Wastewater treatment facilities serving more than two properties are prohibited in the Flood Fringe.
 3. Individual OWTS, when allowed, must conform to the requirements of 4-405(G).
 4. Fences in the Flood Fringe are subject to all Boulder County Building Code and other fence requirements.

4-404.1 General Floodplain Development Permits

- A. **Intent.** To minimize undue hardship to property owners within Boulder County yet remain in compliance with FEMA regulations regarding Floodplain permitting, the County Engineer is authorized to issue one or more General Floodplain Development Permits. The intent of the General FDP is to allow certain limited uses and activities in the Floodplain without the need for an approved Individual FDP because these specific uses and activities are unlikely to increase BFEs or have an adverse effect on neighboring properties, species, or ecosystems.
- B. **Content of a General FDP.** If the County Engineer determines it appropriate to issue a General FDP, he shall include the following information on the face of the permit.
1. A list of specific uses and activities deemed within the scope of the General FDP.
 2. Whether or not property owners must notify the County Engineer prior to beginning work on an activity included within the General FDP.
 - a. The County Engineer shall require such notification for development activities for which it is necessary to evaluate individual and cumulative impacts, ensure minimum compliance with federal and state floodplain rules, and confirm that the uses or activities are unlikely to increase BFEs or have an adverse effect on neighboring properties, species, or ecosystems.
 - b. For projects where the County Engineer will receive notice through referral required by a separate Land Use Code review process (such as Site Plan Review or Special Use Review), the County Engineer need not require duplicative notification. For all other projects where the County Engineer decides to require notification, the applicant must submit the following information to the County Engineer a minimum of 21 days prior to commencing work:
 - (i) Project description, including materials description and a discussion on the expected impact to the channel and floodplain;
 - (ii) Location description (an accompanying location map is best); and
 - (iii) Site plan, if necessary to further describe the work.
 - c. If the work is within the scope of the General FDP, the County Engineer will respond to the owner with approval to proceed. If additional information is necessary or if the work requires issuance of an Individual FDP, the County Engineer will inform the owner within 14 days of notification submission, or through the Land Use Review referral process.
 3. Conditions of approval, if any, for work approved under the General FDP.
- C. **Process for Issuing, Amending, or Rescinding a General FDP.**
1. If the County Engineer determines that a new General FDP is appropriate, he shall post the proposed General FDP on the Transportation Department website and also in the manner described in Article 3 by which the public is given notice of

comprehensive rezonings, so that the public may review and comment. No such new FDP shall become effective until 14 days after the date it is posted.

2. If the County Engineer determines that an amendment to an existing General FDP is appropriate, whether to reflect changes to federal, state, or local regulations or guidance or for other good cause, he shall post the revised General FDP on the Transportation Department website and also in the manner described in Article 3 by which the public is given notice of comprehensive rezonings, so that the public may review and comment. No such revised FDP shall become effective until 14 days after the date the revision is posted.
3. If the County Engineer determines that an existing General FDP should be rescinded in its entirety, whether to reflect changes to federal, state, or local regulations or guidance or for other good cause, he shall post a notice to this effect on the Transportation Department website and in the manner described in Article 3 by which the public is given notice of comprehensive rezonings, so that the public may review and comment. The General FDP shall be deemed rescinded 14 days after the date the rescission notice was posted.
4. Subject to the notice requirements described above, the County Engineer may issue, amend, or rescind a General FDP at any time, on his own initiative, without the need for public hearings before Planning Commission and Board of County Commissioners.
5. All General FDPs in effect at a given point in time must comply with all applicable provisions of this section 4-404.1.

D. No Permit Fees. If the County Engineer determines a use or activity falls under the approval granted in a General FDP, no permit fee will be charged to the owner.

E. Work Not Approved under a General FDP. Any development within the Floodplain that does not meet the criteria of a General FDP requires either approval of an Individual FDP prior to beginning the work or a determination by the County Engineer that no FDP is required at all.

1. Should any work commence that is assumed by an applicant to be covered by a General FDP, and the County Engineer determines it is not covered by a General FDP, a Stop Work order will be issued. The unpermitted work will be treated as a zoning violation under Article 17 until an approved Individual FDP is issued or the violation is otherwise resolved.
2. Anyone considering a project in the Floodplain that varies from the projects described in an issued General FDP should contact the County Engineer to determine if an Individual FDP application is required. The County Engineer makes the final decision as to the applicability of a General FDP. Any project determined by the County Engineer to create a significant obstruction to flood flows will require an Individual FDP.

F. Other Permits. Eligibility for a General FDP does not eliminate the need for applicants to obtain all other required permits, including building, grading, access, construction, and/or stormwater permits from Boulder County, as well as other state and federal permits.

- G. **Records of Issued General FDPs.** A copy of all issued General FDPs, including previous versions, will be kept on file in the County Engineer’s office at all times and available for public review.

4-404.2 Individual Floodplain Development Permits

- A. **Floodplain Pre-Application Conference.** A Floodplain Pre-Application Conference (Floodplain Pre-App) between the applicant and the County Engineer (or his/her designee) is required for all Individual FDPs, unless waived in writing by the County Engineer as unnecessary under the circumstances. The Boulder County Land Use Department may require a Pre-Application Conference as defined in Section 3-201, which may be substituted for the Floodplain Pre-App requirement of this section. The Floodplain Pre-App should include discussion of conforming and nonconforming structures and uses on the subject property.
- B. **Submittal Requirements.** Applications for Individual FDPs are to be submitted to the Boulder County Land Use Department and are subject to the following submittal requirements, unless the County Engineer determines that a particular requirement does not apply.
1. For all Individual FDP submittals:
 - a. A completed Individual FDP application form;
 - b. A narrative describing the work to be performed; and
 - c. A location map, showing the specific areas and property(ies) where the work will be performed.
 2. For construction of new buildings or improvements to existing buildings, The County Engineer will obtain pertinent documents from the applicant's Building Permit submittal package. Building Permit/Individual FDP submittals should include and call out all elements for flood protection required per 4-405. In addition, the following items shall be included in the Building Permit/Individual FDP submittal:
 - a. Specifications for construction and building materials (including considerations for flood resistant materials when required, per FEMA *Technical Bulletin 2*);
 - b. Description and locations of any proposed site, filling, dredging, grading, and/or channel improvements
 - c. Location of any and all proposed materials storage and staging areas, as applicable;
 - d. Location of the current regulatory FO District boundaries, including both FEMA and/or Boulder County Floodplain information;
 - e. Plans must include the elevation, in feet referenced to the North American Vertical Datum of 1988, to which the flood protection measures apply. See 4-405(A), Flood Protection Elevation.
 - f. Certification that the building or improvement is designed in accordance with the flood protection measures outlined in 4-405(C) for New Floodplain Construction and conforming existing buildings and 4-413 for improvements to nonconforming existing buildings.

3. For bridges, culverts, other hydraulic structures, work within the channel banks, and stream restoration projects, in addition to the items listed above, the following items are required:
 - a. A plan at a scale of 1" = 200' or larger, stamped by a P.E. registered in the State of Colorado, which includes:
 - i. the site location;
 - ii. existing and proposed base flood limits and water surface elevations, if applicable;
 - iii. Floodway limits, if applicable;
 - iv. channel, watercourse or flowpath;
 - v. vertical and horizontal datum;
 - vi. existing and proposed contours or elevations at 2' intervals;
 - vii. existing buildings
 - viii. location and elevations of existing streets, water supply, and sanitation facilities, if applicable;
 - ix. limits and total land area of all existing and proposed impervious surfaces, including buildings; and
 - x. existing water supply ditches, irrigation ditches and laterals.
 - b. A typical valley cross-section showing:
 - i. channel, watercourse, or flowpath;
 - ii. limits of floodplain adjoining each side of channel;
 - iii. cross-section area to be occupied by the proposed development;
 - iv. existing and proposed base flood water surface elevations;
 - c. Documentation that addresses scour (if required) and other design requirements in accordance with The Boulder County Storm Drainage Criteria Manual;
 - d. Evidence of compliance with 4-404.2(D) of this section.
 - e. Evidence of compliance with Section 404 of the Clean Water Act and the Endangered Species Act.
4. For OWTS, a Site Plan that includes items 4-404.2(B)(3)(a)(i-viii) above is required, in addition to the following:
 - a. A geotechnical report, certified by a P.E. registered in the State of Colorado, which includes specifications on the system type and layout, building connections, and the flood protection measures required under 4-405(G).

5. For underground utilities not covered by the General FDP, an analysis of the impacts of scour potential as well as design considerations to protect against scour must be provided.
6. For Projects determined to be in the Floodway as defined in 4-414, an engineering analysis certified by a Colorado-registered P.E. in accordance with 4-404.2(E).
7. For any proposed Alteration or relocation of a watercourse, including stream restoration projects and engineered channelization projects, the County Engineer requires a description of the extent to which any watercourse will be altered or relocated, and that conveyance is not decreased as a result of the project, and that the flood carrying capacity of the watercourse is maintained over time.
 - a. All proposals for watercourse Alteration or relocation must include, in addition to all other applicable materials, pre- and post-project conveyance calculations to demonstrate that the flood carrying capacity has not been decreased.
 - b. For engineered channelization projects, including those types outlined in the Boulder County Storm Drainage Criteria Manual, permit applicants are required to submit, along with all other applicable materials, a maintenance plan that outlines the maintenance activities to be performed, the timing/schedule for those activities, and the agency or representative responsible for maintenance in order to ensure the flood carrying capacity is maintained.
 - c. Prior to any Alteration or relocation of a watercourse, the County Engineer must notify adjacent communities, potentially affected property owners, and the CWCB in the following manner:
 - i. Notification must be done through the publication of a notice of such proposed alteration or relocation once in a newspaper of general circulation in Boulder County.
 - ii. The County Engineer must keep on-file evidence of such notification.
 - d. Watercourse Alteration/relocation/channelization projects in the FO District are subject to the county's modeling requirements covered in 4-404.2(E) prior to permitting. In addition, at the discretion of the County Engineer, any watercourse alteration/relocation/channelization project that shifts the stream horizontally in any direction more than one bankfull width will require submittal and approval of a CLOMR from FEMA prior to permitting.
8. Adequate evidence of either direct ownership of the subject property or legal authority to act on behalf of the owner(s) of record;
9. Any additional information required by the County Engineer necessary to allow the review criteria in this Article 4-400 to be adequately evaluated.

C. Completeness Review by the County Engineer. Once an application for an FDP is filed, the County Engineer must review it for completeness.

1. The County Engineer may suspend processing an FDP application at any time at the request of the applicant or whenever the County Engineer determines that the application is not complete. The County Engineer may deem the application incomplete, based on the application submittal requirements, at the County Engineer's initiative or at the request of a referral agency. In the event that the County Engineer deems an application incomplete, the County Engineer will immediately notify the applicant of the shortcomings. Once the requested information has been provided, the application must be deemed filed as of that date and the County Engineer will proceed to process the application and render a decision. If an application is not deemed complete within six months of the date of suspension, the County Engineer may declare the application withdrawn. The six month time frame may be extended should the County Engineer determine that circumstances beyond the control of the applicant prevent a timely completion of the application.

D. **Application Review Criteria.** In reviewing an application for a Floodplain Development Permit, the County Engineer must first determine the specific flood hazard at the site in accordance with 4-403 and evaluate the suitability of the proposed use or development in relation to the flood hazard. The County Engineer must then consider the following factors in reviewing Individual FDP applications:

1. the effect of the proposal upon the efficiency or capacity of the Floodway;
2. the effect on lands upstream, downstream and in the immediate vicinity of the development including, without limitation, utility and transportation facilities;
3. the probability that the proposal will result in unreasonable risk of harm to people or property – both onsite and in the surrounding area – from natural hazards;
4. the effect of the proposal on the flood profile and flood heights;
5. the effect of the proposal on any tributaries to the main stream, drainage ditches, water supply and irrigation ditches, storm drainage facilities, reservoirs, or any other drainage or irrigation facilities or systems;
6. the relationship of the proposed development to the flood management program for the area in question, including whether additional public expenditures for flood protection or prevention will be necessary;
7. whether the applicant would obtain an undue advantage compared to later applicants who might request a permit;
8. whether the proposed use is for human occupancy;
9. the susceptibility of the proposed facility and its contents to flood damage;
10. the safety of access to the property in times of flood for ordinary and emergency vehicles;
11. whether any proposed changes in a watercourse will have an environmental effect on the watercourse, including streambanks and streamside trees and vegetation;

12. the alignment of the proposed development with the Boulder County Comprehensive Plan, Watershed Master Plans, and any other planning-related documents pertaining to development in Boulder County;
13. whether the cumulative effect of the proposed development with other existing and anticipated uses will increase flood heights more than the allowances specified in 4-404(A);
14. whether the heights and velocities of the floodwaters expected at the site will adversely affect the development of surrounding property; and
15. whether additional flood protection is necessary based on historical flood evidence, increased development upstream, or other flood-related hazards such as flash flooding, debris flows, rockfalls, mudslides, landslides, avalanches, channel avulsions, alluvial fan hazards, erosion and deposition of material, debris dams, ice jams, and high flood depths or velocities.

E. Procedures for Modeling Proposed Development within the Floodway.

1. Unless one or more requirements below are modified by the County Engineer for good cause shown by the applicant, for all projects confirmed to be wholly or partially within the Floodway the applicant must submit an engineering report, including a Floodway analysis certified by a qualified engineer licensed in Colorado using the same type of model that was used to establish the current regulatory flood hazards. Applicants may obtain a copy of the applicable floodplain model from Boulder County. Models that differ from the type used to establish the regulatory flood hazards must first be approved for use by the County Engineer.
2. Modeling submitted to Boulder County in support of an Individual FDP must include the following:
 - a. Duplicate Effective (Regulatory) Model. This model is necessary to confirm that the regulatory water surface elevations can be reproduced to within 0.5 foot. When Boulder County regulates flood hazards that are more conservative than those identified by FEMA, it is the model that is associated with the Boulder County Floodplain.
 - b. Corrected Effective Model. The model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections, or incorporates more detailed topographic information than that used in the current effective model. Floodway limits should be manually set at the new cross-section locations by measuring from the effective FIRM. The cumulative reach lengths of the stream should also remain unchanged. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model.
 - c. Existing or Pre-Project Conditions Model. The applicant must revise the duplicate effective or corrected effective model to reflect any modifications (including man-made encroachments) that have occurred within the floodplain since the date of the effective model but prior to construction of the proposed project. If no modifications have occurred

since the date of the effective model, then the model would be identical to the duplicate effective or corrected effective model, and only one of these models is required. The results of this existing conditions analysis will indicate the 100-year elevations to be used for comparison to proposed conditions at the project site.

d. Proposed or Post-Project Conditions Model. The applicant must then modify the existing conditions model (or duplicate effective, or corrected effective, as appropriate) to reflect the proposed project. The overbank roughness coefficients should remain the same unless a reasonable explanation of how the proposed project will impact roughness values is provided, with supporting data. The results of this analysis will indicate the 100-year elevation for proposed or post-project conditions at the project site. These results must demonstrate no impact (measured as 0.00) to the 100-year water surface elevations when compared to the existing conditions model (referred to as a “No-Rise Certification”).

(i) Should this comparison result in water surface elevation increases that cannot be mitigated through project design changes, then the provisions of 4-404(C)(2)(a) must apply.

e. All models must use the most current regulatory hydrology.

4-405 Flood Protection Measures

Flood Protection Measures apply to development within the FO District in Zones AE, A, AO, and AH.

A. **Flood Protection Elevation (“FPE”).** For the purposes of this section, the Boulder County FPE is equal to the following:

1. In areas depicted as Zone AE in the FO District, the FPE is equal to the BFE plus 2 feet. The BFE is the elevation of the 1%-annual-chance (typically referred to as 100-year) flood. In other words, it is the flood that has a 1% chance of occurring in any given year.
2. In areas depicted as Zone A in the FO District, the following applies:
 - a. As required by 44 CFR 60.3(b)(4), Boulder County must obtain and reasonably utilize BFE and water surface elevation information from local, state, federal, or other reliable sources
 - b. In those Zone A areas where a BFE can be determined from the sources outlined in 4-405(A)(2)(a), the FPE will be 2 feet above the calculated BFE
 - c. In those Zone A areas where a BFE cannot be determined from the sources outlined in 4-405(A)(2)(a), the FPE will be 3 feet above the highest grade in the area of the proposed development.
 - (i) For buildings, the FPE will be 3 feet above the highest grade within the proposed building footprint, or the highest grade adjacent to the exterior of the existing building, unless the applicant supplies information sufficient to determine a BFE and subsequent FPE for the building, including data submitted as a part of identifying the Floodway boundary pursuant to the Floodway definition in 4-414.
3. In shallow flooding areas (Zone AO), the FPE is equal to:
 - a. Two feet above the specified flood depth; or
 - b. If no flood depth is specified, 3 feet above the highest grade that exists within the proposed building footprint.

B. General Requirements

1. All development in the FO District must be adequately protected from flooding according to the requirements of this section.
2. Prior to submitting an application, applicants shall confirm with the County Engineer all conforming and nonconforming structures and uses on the subject property. Improvements to conforming structures and buildings must meet all applicable requirements in section 4-405. Improvements to nonconforming structures and buildings must meet all applicable requirements in section 4-413.
3. Materials that are buoyant, flammable, hazardous, toxic, or explosive, or that in times of flooding could be harmful to human, animal, or plant life, may not be

stored or processed except at or above the FPE, unless the materials are stored in accordance with 4-405(H) governing storage tanks.

4. All construction (including New Floodplain Construction as well as improvements below the FPE) must be built with materials and utility equipment resistant to flood damage up to the FPE.
5. All new and replacement water supply systems must be designed to minimize or eliminate infiltration of flood waters into the system.
6. Lateral additions to any residential building must be elevated to the FPE and adequately anchored to prevent flotation, collapse, or lateral movement of the addition resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
7. Lateral additions to any commercial or accessory building or structure must be adequately protected from flooding in accordance with 4-405(C)(3)(a) and 4-405(C)(3)(b), respectively.

C. New Floodplain Construction

1. General Requirements

- a. All New Floodplain Construction must be built using methods and practices that minimize flood damage.
- b. New Floodplain Construction in the Floodway is prohibited.
- c. New Basements in the Flood Fringe are prohibited.
- d. All New Floodplain Construction must be designed and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, and must be certified by a P.E. registered in the State of Colorado that they have been constructed to withstand such forces and are adequately protected from flooding up to the FPE;
- e. New buildings or other structures must be placed with their longitudinal axes parallel to the predicted direction of flow of flood waters or be placed so that their longitudinal axes are on lines, parallel to those of adjoining structures, to the extent consistent with other provisions of this code. This is intended to minimize the obstruction to flow caused by a building or structure.
- f. New service equipment, including, but not limited to, electrical, heating, ventilation, plumbing, and air conditioning equipment, must be located at or above the FPE.
- g. New Floodplain Construction in Zone AO or AH must be accompanied by site/property grading to accommodate drainage of floodwaters around the perimeter of the building in a controlled manner, without adversely impacting adjacent properties.

- h. New Floodplain Construction on a property removed from the floodplain by issuance of a LOMR-F from FEMA must have the Lowest Floor elevated to or above the FPE that existed prior to the placement of fill.

2. Residential Buildings

- a. All new residential buildings constructed in the Flood Fringe or within Zones A, AO, or AH must have their Lowest Floors (including Basements, porches, and decks), as well as any and all service equipment (excepting the necessary connections to public utility), elevated to the FPE, either by the placement of fill or by construction on elevated foundation walls.
- b. Fully enclosed areas below the lowest floor of a building in the FO District must be used solely for parking of vehicles, building access, or storage of materials. These areas must be designed to equalize the hydrostatic pressure flood forces on exterior walls by allowing for the entry and exit of floodwaters (known as “Wet Floodproofing”). Designs for meeting this requirement must either be certified by a registered Professional Engineer or must meet or exceed the following minimum criteria:
 - (i) A minimum of two openings on at least 2 walls having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding must be provided;
 - (ii) The bottom of all openings must be no higher than one foot above grade; and
 - (iii) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.
- c. Attached garages may be constructed at-grade but must comply with 4-405(C)(2)(b) above. Openings are permitted to be installed in garage doors; however, the garage door itself does not qualify as an opening for Wet Floodproofing purposes.

3. Non-residential Buildings. Non-residential buildings built in the Flood Fringe, or within Zones A, AO, or AH must conform with 4-405(C)(2) above, or must conform with the requirements below based on building type:

a. Commercial Buildings

- (i) Commercial buildings, including attendant and sanitary facilities and attached garages, must conform with 4-405(C)(2), or must be designed to be water-tight with walls substantially impermeable to the passage of water below the FPE.
- (ii) The building must be anchored to prevent flotation, collapse, or lateral movement.

- (iii) The building must be constructed using structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
- (iv) All flood protection measures for commercial buildings must be certified by a Colorado Registered Professional Engineer that the methods are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces, and other factors associated with the Base Flood. Such certification must also state the specific elevation (including vertical datum reference) to which the construction is protected from flooding.
- (v) For commercial buildings designed to be watertight, the FEMA Floodproofing Certificate for Non-Residential buildings should be completed, and must be reviewed and approved by the County Engineer.

b. Accessory Buildings and structures

- (i) Accessory buildings and structures, including but not limited to detached garages, sheds, barns, and any other structure considered accessory to the primary use or primary building, must conform with 4-405(C)(2) above, or may be constructed at grade but must meet the requirements of 4-405(C)(2)(b) above for fully-enclosed areas below the FPE, and are subject to the following conditions:
 - a. The building or structure must be used only for the parking of vehicles or storage of tools, materials, and equipment;
 - b. The building or structure must not be designed for or used as Habitable Space;
 - c. The accessory building or structure must represent a maximum investment of less than 10% of the value of the principal building on the property, or a maximum floor area of 600 square feet;
 - d. The building or structure must have low flood damage potential with respect to both the building and its contents; and
 - e. Permanently affixed appliances (such as furnaces, heaters, washers, dryers, etc.) are prohibited.
 - f. Prior to issuance of Certificate of Occupancy or final inspection, whichever occurs last, the property owner must execute a Non-Conversion Agreement and the County must record the agreement in the real estate records. The agreement will be in the form of a restrictive covenant or other County approved binding instrument,

where the benefits of the covenant run in favor of the County. The covenant must be drafted to run with the land and bind successors, in perpetuity. The purpose of the covenant is to document the current owner's understanding of the limitations on construction and use of the enclosed area in accordance with the provisions of this section 4-405(C)(3)(b) (Accessory Buildings and Structures), and to put prospective purchasers on notice of such restrictions. The covenant will also reference retrofitting criteria necessary to properly convert accessory buildings or structures to habitable space, should the owner choose to do so. In addition to any other enforcement mechanisms available, violation of the agreement will be considered a violation of this Article 4-400 and subject to all applicable zoning enforcement procedures.

- (ii) Accessory structures that do not have at least two rigid walls, including but not limited to carports, gazebos, and picnic pavilions, may be constructed at grade and must use flood-resistant materials up to the FPE.
 - (iii) Accessory Dwelling Units (including detached garages designed with Habitable Space on the second floor) must meet the above requirements of 4-405(C)(2) for residential buildings, which includes either elevation of the entire building above the FPE, or wet floodproofing of the lower level garage space.
- c. Agricultural Buildings and Structures. New Floodplain Construction of any Permanent agricultural building or structure in the Flood Fringe must be limited in use to agricultural purposes, in which the use is exclusively in connection with the production, harvesting, storage, drying, or raising of agricultural commodities, including the raising of livestock. Types of buildings and structures that qualify under this section include farm storage structures (used exclusively for the storage of farm machinery and equipment), grain bins, corn cribs, and general purpose barns/loafing sheds.
- (i) The building or structure must not be designed for or used as Habitable Space.
 - (ii) The building or structure must be wet-floodroofed according to 4-405(C)(2)(b).
 - (iii) Service equipment must be elevated to the FPE, unless elevation of such equipment impedes its agricultural use.
 - (iv) Permanent agricultural buildings or structures are prohibited in the Floodway.

- (v) Temporary agricultural buildings or structures are allowed in the floodway, but are required to be relocated outside of the FO District or deconstructed in the event of a flood warning. If relocation outside of the FO District is not possible, then relocation to the Flood Fringe will be allowed, so long as the temporary structure is properly anchored.
- d. Crawlspaces. New Floodplain Construction of any Below-Grade Crawlspace must:
 - (i) Have the interior grade elevation, that is below BFE, no lower than two feet below the Lowest Adjacent Grade;
 - (ii) Have the height of the Below-Grade Crawlspace measured from the interior grade of the Crawlspace to the top of the foundation wall, not to exceed four feet at any point;
 - (iii) Have an adequate drainage system that allows floodwaters to drain from the interior area of the Crawlspace following a flood; and
 - (iv) Meet the provisions 4-405(C)(1), General Requirements.

D. Critical Facilities

1. New Critical Facilities are prohibited in the regulatory floodplain below 6,000 feet (NAVD88) in elevation.
2. In the mountain canyons above 6,000 feet (NAVD88), new Critical Facilities in the FO District will be considered on a case-by-case basis, and may require special design or flood protection considerations, including considerations of hydrodynamic flood forces and flood-induced erosion.
3. Improvements to existing Critical Facilities that are determined to be Substantial Improvements require that the entire facility (including attendant utility and sanitary facilities) be elevated to the Boulder County FPE or, if not prohibited elsewhere in this code, be retrofitted such that the building is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads, including the effects of buoyancy.

E. Manufactured Home Parks

1. General Requirements. All manufactured homes must be installed using methods and practices which minimize flood damage. For the purposes of this requirement, manufactured homes must be elevated to the FPE and anchored to resist floatation, collapse, or lateral movement. All requirements below are in addition to applicable state and local requirements, including those to address wind loads.
2. For new parks commenced on or after February 1, 1979; expansions to existing parks; existing parks where the value of the repair, reconstruction, or

improvement of the streets, utilities, and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement has commenced; an existing park on which a manufactured home has incurred Substantial Damage; manufactured homes to be placed or substantially improved on sites in existing parks; and for manufactured homes not placed in a park:

- a. Stands or lots must be elevated on compacted fill or on pilings so that the lowest floor of the manufactured home will be at or above the FPE. For homes placed on pilings:
 - (i) lots must be large enough to permit steps;
 - (ii) piling foundations must be placed in a stable soil no more than ten feet apart; and
 - (iii) reinforcements must be provided for pilings more than six feet above the ground level.
- b. Adequate surface drainage must be provided.
- c. New manufactured homes must be anchored by providing over-the-top and frame ties to ground anchors as well as the following:
 - (i) over-the-top ties at each of the four corners, with two additional ties per side at intermediate locations, with the exception of manufactured homes less than 50 feet long which require only one additional tie per side;
 - (ii) frame ties at each corner with five additional ties per side at intermediate points, with the exception of manufactured homes less than 50 feet long which require only four additional ties per side;
 - (iii) all components of a manufactured home anchoring system must be capable of carrying a force of 4800 pounds; and
 - (iv) Any additions to the manufactured home be similarly anchored.

F. Recreational Vehicles

1. At least one of the following provisions must be met:
 - a. The recreational vehicle must be on the site for fewer than 90 consecutive days;
 - b. The recreational vehicle must be fully licensed and ready for highway use;
or
 - c. The recreational vehicle must meet the permit requirements and elevation and anchoring requirements for manufactured homes, in accordance with Section 4-405(E) of this section.

G. Onsite Wastewater Treatment Systems

1. For the purposes of this section, “New OWTS” is the first OWTS installed on a parcel.
2. The location of new and replacement OWTS must be done in such a manner as to avoid impairment to or contamination from the systems during flooding.
 - a.Placement of a new OWTS in the FO District (including both Floodway and Flood Fringe areas) is prohibited, unless the County Engineer determines that placement in the Flood Fringe cannot be avoided, in which case priority must be given to those locations on the subject property where flood depths and/or velocities are the lowest, and to the optimal location of the water supply.
3. New OWTS
 - a.All Tanks, including Septic Tanks, for new OWTS in the FO District must be made of concrete.
 - b.Tanks must be adequately anchored to protect against buoyant forces associated with flooding and high groundwater, which is typical during flood conditions.
 - (i) Tanks that are installed within the Boulder County or FEMA 500-year floodplain should be anchored to protect against uplift from high groundwater. Where the 500-year floodplain is not shown, the anchoring requirement will apply if the lowest elevation of the tank is at or below the 100-year base flood elevation adjacent to the tank location.
 - (ii) Boulder County requires that the FEMA-recommended calculation for determining buoyant forces (contained in FEMA P-348, or the latest FEMA guidance document covering building utilities) be used to adequately design buoyancy countermeasures. The equation is as follows:

$F_b = 0.134V_t\gamma FS$		
<i>Where:</i>	F_b	is the buoyancy force exerted on the tank, in pounds.
	V_t	is the volume of the tank in gallons.
	0.134	is a factor to convert gallons to cubic feet.
	γ	is the specific weight of flood water surrounding the tank (generally 62.4 lb/ft ³ for fresh water and 64.1 lb/ft ³ for salt water.)
	FS	is a factor of safety to be applied to the computation, typically 1.3 for tanks.

- c.Inspection Ports and access covers must be sealed to prevent the entry of floodwaters or the exit of septic effluent.

- d. Raised Soil Treatment Areas are required, and must be designed such that the base of the distribution layer is a minimum of 2 feet above existing grade
- e. Connections to the house must be fitted with backflow prevention, unless it is demonstrated in the permit application that the connection pipe rises above the calculated FPE for the site.
- f. With the exception of the Soil Treatment Area, earthwork necessary for system installation must not exceed pre-construction grade.
- g. While not required, backup generators are recommended for any system fitted with electric pumps or controls.

4. Repair/Replacement OWTS

- a. For any OWTS in the Flood Fringe that requires replacement, the system must meet the requirements of 4-405(G)(3).
- b. In addition to the requirements of 4-405(G)(4)(a), for any repair or replacement of an existing OWTS in the Floodway the County Engineer must determine that the proposed repair/replacement is consistent with Subsections (i) through (iii), below.

(i) The property owner has demonstrated that connection to a central sewer system is not feasible by:

- a. Providing a letter of denial from the closest sewer provider; or
- b. Demonstrating other reasons why connection is not feasible, such as that there is no central sewer system reasonably close to the property or building to be served, or that easement restrictions exist that effectively prohibit connection. For properties within a Community Service Area, connection will be deemed not feasible if the cost of connection exceeds 25% of the most recent assessed value of the subject property.

(ii) The proposed repair or replacement design must be protective of groundwater and appropriate for a Floodway. In making a proposal to the County Engineer, the applicant must address the following factors, among other pertinent information:

- a. Whether it is practical to remove outbuildings or non-conforming additions to allow for increased soil availability so that the proposed repair or replacement can be located outside of the Floodway;
- b. Whether there is room for an at-grade recirculating sand filter, or similar treatment media, and the required absorption area;

- c. Whether placement in the hydraulic shadow of a legal, existing structure is possible.

(iii) In no event must a proposed repair or replacement increase the overall capacity of the existing OWTS, unless the expansion is necessary to meet the Boulder County OWTS Regulations, as administered by the Boulder County Public Health Department. In addition, the County Engineer may approve a raised absorption system or installation of a vault only as a last option within the Floodway and provided that this option meets the provisions of Article 4-413 (Nonconforming Uses).

H. Liquid Propane Gas (LPG) or Other Similar Storage Tanks

1. Placement of a new or replacement LPG or other similar storage tanks in the FO District is prohibited, unless the County Engineer determines that placement in the FO District cannot be avoided, in which case location decisions must prioritize those portions of the subject property where flood depths and/or velocities are the lowest, including, but not limited to the conveyance shadows of existing buildings.
2. When allowed, above-ground tanks must be placed on a concrete pad that extends to or above the FPE and is sufficiently-anchored. If elevation of the tank conflicts with IBC requirements, the IBC requirements must prevail; however, in all cases, sufficient protection must be provided to the tank such that it resists the expected hydrostatic and hydrodynamic flood forces.
3. When allowed, underground tanks must be designed and installed to resist the effects of buoyancy during high groundwater or flooding conditions. Buoyancy calculations must assume an empty tank and must use the same calculation outlined for Septic Tanks in 4-405(G)(3) above. Anchoring of the tank is required if the empty tank alone will not counteract the calculated buoyant force.
4. All connections and components related to the tank or fuel system must be designed such that floodwaters cannot infiltrate or accumulate within any component of the system.
 - a. Inspection Ports and access covers must be sealed to prevent the entry of floodwaters or the exit of tank contents, or must extend above the FPE.
 - b. Tanks located inside of a building must also meet all of the requirements of this section.

I. Historic Buildings and Structures Exempt. The repair or rehabilitation of buildings or other structures designated as historic through either the Boulder County Historic Landmark process or through a State of Colorado or national historical registry process is exempt from Flood Protection Requirements under Section 4-405. Entitlement to such an exemption requires the applicant to show:

1. Documentation that the building or structure is designated as a historic building or structure as defined by Article 18-203A; and

2. Documentation that confirms that the proposed work will not preclude the structure’s continued historic designation.

J. Elevation Certificate Requirements

1. As built Lowest Floor Elevations (referenced to the NAVD88 datum) for all New Floodplain Construction, Substantial Improvements, other improvements, or for new manufactured home stands, must be certified by a Colorado Registered Professional Engineer or Colorado Registered Professional Land Surveyor. Elevation Certificates must be submitted to the Building Division Inspector and County Engineer twice over the duration of the project. Failure to submit an Elevation Certificate will result in a Stop Work Order until proper certification is provided. To ensure compliance with flood protection requirements during and after construction, completed Elevation Certificates must be submitted at the following times:
 - a. For slab-on-grade foundations, a FEMA Elevation Certificate must be submitted prior to final pour of foundation when foundation forms are completed.
 - b. For buildings on elevated foundations, such as extended foundation walls, stem walls, or piles, a FEMA Elevation Certificate must be submitted prior to rough framing when the foundation is completed.
 - c. For all buildings that have achieved finished construction, a final FEMA Elevation Certificate must be submitted prior to the issuance of Certificate of Occupancy or final inspection.
2. To convert another elevation reference datum to NAVD88, applicants are directed to datum conversion factors within the current effective FEMA FIS report for Boulder County, or to an online datum conversion program. Assumptions used for the datum conversion must be explicitly described to Boulder County on the Elevation Certificate. For datum requirements for permit submittals, see 4-404.2(B).

4-406 County Engineer’s Determination

- A. If the County Engineer finds in reviewing an Individual FDP application that the application meets the applicable standards set forth in Article 4-400, the County Engineer must approve the permit.
- B. If the County Engineer finds that the application can only meet all applicable standards if the FDP approval is conditioned, then the County Engineer must include all necessary and reasonable conditions when issuing the permit. Such conditions may include, but are not limited to, periods of operation, operational controls, sureties, deed restriction, and adequate flood protection. The County Engineer must specify when the conditions must be met.
- C. If the County Engineer finds that the application does not meet one or more applicable standards and that a reasonable basis for mitigation measures has not been demonstrated, the County Engineer must deny the application as proposed. The County Engineer’s determination must specify the reasons for the denial based upon the FDP review criteria in Section 4-404.2(D).
- D. Any determination by the County Engineer to approve, conditionally approve, or deny a FDP must be in writing and mailed or otherwise provided to the applicant.
- E. For purposes of appeal to the Board of Adjustment, the County Engineer’s determination will be deemed final as of the date the FDP is issued. The applicant may begin work under an issued permit as of the date the permit is issued. If an applicant begins work during the 30-day appeal period to Board of Adjustment, the applicant does so at their own risk, as some or all of the work may need to be modified or removed at the applicant’s expense if the Board of Adjustment overturns the County Engineer’s decision to issue the permit.

4-407 Review of Permits Approved in Floodway

- A. In the event that the County Engineer determines that an Individual FDP application for any development in the Floodway meets the applicable standards for approval, within five business days of permit issuance the County Engineer must publish a notice of the proposed use and the permit issuance on the Boulder County website and transmit a copy of the notice to property owners adjacent to the subject property as well as a description of the process for appealing the decision to the Board of Adjustment.
- B. The County Engineer may waive or modify any requirement in 4-407(A) for the following Floodway development:
 - 1. Emergency activities required for the immediate protection of life, safety, or property, or to restore essential public services,
 - 2. Minor disaster recovery repair work that does not cause a rise in predicted 100-year water surface elevation as determined by a qualified engineer licensed in Colorado, and
 - 3. Any development activities that take place entirely inside an existing building.

4-408 Appeal of County Engineer Determination

- A. **Right to Appeal.** Any person aggrieved by a final written decision of the County Engineer based upon or made in the course of the administration or enforcement of the provisions of this Article 4-400 may appeal to the Board of Adjustment.
- B. **Appeal Application.** The procedures and requirements for filing an appeal may be found in Article 3 and in particular section 3-202(A)(1).
- C. **Public Hearing.** Upon receipt of a complete appeal application, the Board of Adjustment must hold a public hearing on the appeal application following the procedures specified in section 3-205(A).
- D. **Review Criteria.** In deciding upon an appeal of a County Engineer administrative decision or interpretation made under this Article 4-400, the Board of Adjustment must consider the factors specified in Section 4-1200(A)(1) as well as the additional factors listed below:
 - 1. the technical meaning of the provision being appealed;
 - 2. evidence as to the past interpretation of the provision;
 - 3. the principles of interpretation and rules of construction in Article 1 of this Code;
 - 4. the effect of the interpretation on the intent of this Code and the implementation of the Comprehensive Plan and any applicable intergovernmental agreement affecting land use or development, and any floodplain management program for the subject area;
 - 5. the danger that materials may be swept onto other lands to the injury of others;
 - 6. the danger to life and property due to flooding or erosion damage;
 - 7. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners;
 - 8. the importance of the services provided by the proposed facility to the community;
 - 9. the necessity to the use or structure of a waterfront location, where applicable;
 - 10. the availability of alternative locations for the proposed use or structure which are not subject to flooding or erosion damage;
 - 11. the compatibility of the proposed use or structure with the existing and anticipated development;
 - 12. the safety of access to the property in times of flood for ordinary and emergency vehicles;
 - 13. the expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;

14. the 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 systems, streets and bridges; and

15. the purposes of this Article 4-400.

E. **Decision of the Board.** The Board of Adjustment must make a record of its decision on the appeal in the same manner as other BOA appeals filed under Article 4-1200. The County Engineer must maintain records of the outcome of all appeals filed.

F. **Effect of Decision.**

1. In no instance can a decision on an appeal to the Board of Adjustment result in a modification to the DFIRM. In order to modify the regulatory boundaries established by FEMA, interested parties must use FEMA's LOMC process or consult FEMA on other options for modification.
2. In no instance can a decision on an appeal to the Board of Adjustment result in a modification to the lateral extent of the Boulder County Floodplain. In order to modify the regulatory boundaries established by the County, the owner must request a rezoning map amendment under the procedures of 4-1100.

4-409 Variances

- A. **Right to Request Variance.** Any person may request the Board of Adjustment grant a variance from the requirements in this Article 4-400 subject to the terms and conditions in this section 4-409.
- B. **Variance Application.** The procedures and requirements for filing a request for a variance may be found in Article 3 and in particular section 3-202(A)(19).
- C. **Public Hearing.** Upon receipt of a complete variance application, the Board of Adjustment must hold a public hearing on the request following the procedures specified in section 3-205(A).
- D. **Limitation on Board’s Authority.**
 - 1. In deciding upon a variance request made under this Article 4-400, the Board of Adjustment must comply with the limitations on its authority specified in section 4-1202(B)(1).
 - 2. Variances may be issued for New Floodplain Construction of and Substantial Improvements to residential buildings on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing buildings constructed below the FPE, but only if the criteria in section 4-409(E) below are met and subject to the following:
 - a. Such a variance may not be issued within any designated Floodway.
 - b. Any applicant to whom such a variance is granted must be given written notice that the building will be permitted to be built with a Lowest Floor Elevation below the FPE and that the cost of flood insurance will be commensurate with the increased risk associated with the reduced Lowest Floor Elevation.
- E. **Review Criteria.**
 - 1. To grant a variance of a requirement imposed under this Article 4-400, the Board must find that all of the following criteria have been satisfied:
 - a. the strict application of this Code would create an exceptional or undue hardship upon the property owner;
 - b. the hardship is not self-imposed;
 - c. the variance, if granted, will not adversely affect the use of adjacent property as permitted under this Code;
 - d. the variance, if granted, will not change the character of the underlying zoning district in which the property is located, and is in keeping with the intent of this Code and the Boulder County Comprehensive Plan;
 - e. the variance, if granted, does not adversely affect the health, safety, and welfare of the citizens of Boulder County and is in accordance with the Comprehensive Plan and any applicable intergovernmental agreement affecting land use or development;

- f. the variance is the minimum necessary, considering the flood hazard, to afford relief;
 - g. the variance, if granted, will not result in increased flood heights, additional threats to public safety, or extraordinary public expenses; and
 - h. the variance, if granted, will not create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
2. Prior to granting a variance of a requirement imposed under this Article 4-400, the Board must also consider the following factors:
- a. the technical meaning of the provision being appealed;
 - b. evidence as to the past interpretation of the provision;
 - c. the principles of interpretation and rules of construction in Article 1 of this Code;
 - d. the effect of the interpretation on the intent of this Code and the implementation of the Comprehensive Plan and any applicable intergovernmental agreement affecting land use or development, and any floodplain management program for the subject area;
 - e. the danger that materials may be swept onto other lands to the injury of others;
 - f. the danger to life and property due to flooding or erosion damage;
 - g. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners;
 - h. the importance of the services provided by the proposed facility to the community;
 - i. the necessity to the use or structure of a waterfront location, where applicable;
 - j. the availability of alternative locations for the proposed use or structure which are not subject to flooding or erosion damage;
 - k. the compatibility of the proposed use or structure with the existing and anticipated development;
 - l. the safety of access to the property in times of flood for ordinary and emergency vehicles;
 - m. the expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;
 - n. the 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 systems, streets and bridges; and

o.the purposes of this Article 4-400.

- F. **Decision of the Board.** The Board must approve, conditionally approve, or deny the variance request. The Board may attach such reasonable conditions to the granting of variances as it deems necessary to further the purposes of this Article 4-400. The Board must make a record of its decision on the variance in the same manner as other BOA requests for variances filed under Article 4-1200. The County Engineer must report variances granted on an annual basis to FEMA.
- G. **Conflicts with 4-1200.** If a conflict arises between the requirements of this Section and the provisions of Section 4-1200, Board of Adjustment, the requirements of this Section control.

4-410 Final Inspection

All approved Individual FDPs are subject to final inspection by the County Engineer or his designee to verify that all conditions of approval have been satisfied.

4-411 Permit Expiration

An approved Individual FDP expires two years after the date of issuance if the permittee has not commenced construction under the permit.

4-412 Amendments to an Approved Individual FDP

Any proposal to change the nature or extent of work approved under an issued Individual FDP approved under this Article must require a request to the County Engineer to determine whether the proposed change constitutes a Substantial Modification to the approved plan. If the County Engineer determines that the change constitutes a Substantial Modification, no such change must be allowed to proceed until an application to amend the approved Individual FDP is filed with the County Engineer and approval granted in accordance with this Article. Any new application is subject to the Code in effect at the time of complete application. The applicant or its successor may appeal the County Engineer's decision to require an amended Individual FDP to the Board of Adjustment, provided that any such appeal must be in writing and must be filed with the County Engineer no later than 30 days following the date of the County Engineer's decision to require an FDP amendment.

4-413 Nonconforming Structures and Uses in the FO District

A. Principles of Construction. This Section is to be read in conjunction with Section 4-1000 (Nonconforming Structures and Uses). This section does not supersede 4-1000 in its entirety; rather, it establishes additional requirements for nonconforming structures and uses located in the FO District. If a conflict arises between the requirements of this Section 4-413 and the provisions of Section 4-1000, the requirements of this Section 4-413 control.

B. Nonconforming Structures, Generally.

1. Any building or structure within the FO District that was lawfully established before the adoption or amendment of this Article 4-400 but that does not conform to the requirements of this Article may be continued subject to the provisions of this Section 4-413 and Section 4-1002.
2. Owners of existing nonconforming insurable buildings must track major repairs, remodeling, additions, and other improvements to determine when such work would constitute a Substantial Improvement. FEMA’s minimum requirements for the tracking of improvements and repairs within the Substantial Improvement/Substantial Damage Desk Reference (FEMA P-758), dated May 2010, as amended, is incorporated herein by this reference. Estimates for repair of damage that include additional improvement costs must apply the pre-damaged market value of the building to the sum of the repair and improvement costs.
3. If an amendment to the Official Map or this Article results in a higher BFE such that a building becomes nonconforming, the higher BFE will apply to all subsequent permit applications. All work proposed subsequent to the higher BFE must be evaluated to confirm whether it will be a Substantial Improvement.

C. Nonconforming Structures in the Flood Fringe.

1. A nonconforming building or structure (whether residential or non-residential) in the Flood Fringe may not be expanded, improved, repaired, relocated, restored, or replaced unless the work complies with this section.
2. Where an owner of a nonconforming building or structure (whether residential or non-residential) in the Flood Fringe proposes a Substantial Improvement or repair of Substantial Damage, the owner shall complete the following steps in the following order:
 - a. Relocation Evaluation. The owner must first evaluate the feasibility of relocating the nonconforming building or structure to a less hazardous location on the property.
 - (i) Any relocation must be reviewed and approved by the County Engineer to ensure it reduces the risks associated with future flood events and other known natural hazard areas.
 - (ii) Relocation is subject to other provisions of this Code, including without limitation setback and zoning requirements.

- (iii) Relocation to less hazardous locations is strongly encouraged, but not required.
- (iv) If a nonconforming building or structure is relocated to a less hazardous location, the retrofitting requirements below may be reduced or eliminated at the discretion of the County Engineer.

b. Retrofitting Existing Buildings.

- (i) The entire building or structure must be brought into compliance with the flood protection measures described in section 4-405.
 - (ii) All Flood Fringe retrofitting techniques will require the certification of a P.E. that demonstrates the technique and associated components will withstand the loads associated with a 1%-annual-chance flood event. Non-residential buildings require completion of a Floodproofing Certificate in accordance with 4-405(C)(3)(a)(v).
3. Work on a nonconforming building or structure (whether residential or non-residential) in the Flood Fringe that is not a Substantial Improvement or repair of Substantial Damage must comply with the flood protection measures described in section 4-405 and all other applicable requirements of this Article.

D. Nonconforming Structures in the Floodway. A nonconforming building or structure (whether residential or non-residential) in the Floodway may be improved or repaired only if it complies with all of the following:

- 1. A nonconforming building or structure (whether residential or non-residential) in the Floodway may not be expanded by addition of square footage, footprint, or Habitable Space.
- 2. If the work to improve or repair a nonconforming building in the Floodway is the result of Substantial Damage to the building through a flood or other natural hazard event, the applicant will have five years from the date of loss to begin the work. At the expiration of the five-year period, the applicant may petition the County Engineer for a single one-year extension.
- 3. Where an owner of a nonconforming building or structure (whether residential or non-residential) in the Floodway proposes a Substantial Improvement or repair of Substantial Damage, the owner shall complete the following steps in the following order:

a. Relocation Evaluation. The owner must first evaluate the feasibility of relocating the nonconforming building or structure to a less hazardous location on the property.

- (i) Any relocation must be reviewed and approved by the County Engineer to ensure it reduces the risks associated with future flood events and other known natural hazard areas.
- (ii) Relocation is subject to other provisions of this Code, including without limitation setback and zoning requirements.

- (iii) Permanent removal of encroachments in the FEMA or Boulder County Floodway may qualify the owner for bonus Transferable Development Credits pursuant to section 4-1303.
- (iv) Relocation to less hazardous locations is strongly encouraged, but not required.
- (v) If a nonconforming building or structure is relocated to a less hazardous location, the retrofitting requirements below may be reduced or eliminated at the discretion of the County Engineer.

b. Retrofitting Existing Buildings.

- (i) In addition to requiring conformance with the flood protection measures in section 4-405, the County Engineer shall require one or more of the following retrofitting techniques to protect the entire residential building or structure from flood inundation as well as scour and erosion, debris impact, and other potential hazards associated with floodways:
 - 1) Elevation using Posts, Columns, or Piles
 - i. Posts or columns must be placed in drilled or excavated holes or piles must be driven into the ground.
 - ii. Posts or columns must be encased in concrete and include a footer.
 - iii. Posts, columns, and piles must be sufficiently anchored to resist the expected hydrodynamic and hydrostatic flood forces.
 - iv. Access may be allowed to extend below the FPE.
 - 2) Elevation using stem walls parallel to the direction of flow
 - i. Water must be allowed to flow freely at high velocities between stem walls.
 - ii. Footers must be designed and installed to account for potential scour associated with flooding.
 - 3) Other techniques proposed by the applicant as determined by the County Engineer on a case-by-case basis.
- (ii) In all cases, the bottom of lowest horizontal structural member (floor joists) as well as all service equipment must be above the FPE.
- (iii) In all cases, a continuous load path from the retrofitted foundation to the elevated portion of the home is required.
- (iv) For non-residential buildings, the applicant must first consider the retrofit requirements for residential buildings in this subsection, but at a minimum, the requirements of 4-405(C) apply.

(v) All Floodway retrofitting techniques will require the certification of a P.E. that demonstrates the technique and associated components will withstand the loads associated with a 1%-annual-chance flood event. In addition to the Elevation Certificate requirements of 4-405(J), residential building retrofit projects require completion of the Boulder County Residential Floodway Retrofit Certificate. Non-residential buildings require completion of a Floodproofing Certificate in accordance with 4-405(C)(3)(a)(v).

4. Work on a nonconforming building or structure (whether residential or non-residential) in the Floodway that is not a Substantial Improvement or repair of Substantial Damage must comply with the flood protection measures described in section 4-405 and all other applicable requirements of this Article.

E. Nonconforming Uses.

1. The use of any structure or property within the FO District that was lawfully established before the adoption or amendment of this Article 4-400, but that does not conform to the requirements of this Article may be continued subject to the provisions of this Section 4-413 and Section 4-1003.
2. A change in use (as uses are defined in Article 4-500) of a structure will require that the entire structure be flood-protected pursuant to Section 4-405; provided, however, that the County Engineer may modify or waive flood protection requirements for a change in use based on good cause shown by the applicant that all of the following conditions are met:
 - a. The entirety of the existing structure is located outside of the Floodway;
 - b. The existing structure is determined to be structurally sound by a qualified engineer licensed in Colorado;
 - c. The value of any work associated with the change of use is less than 50% of the current value of the structure;
 - d. The proposed change in use is to a use that is permitted in the zone district applicable to the property;
 - e. The proposed change in use is to a use that reduces, minimizes, or otherwise creates a less intensive use or decreases human occupation; and
 - f. There is no other potential for any significant conflict with this Article 4-400.

4-414 Definitions

Accessory Building or Structure. A building or structure which is on the same parcel of property as a principal or primary building and the use of which is incidental to the use of the principal or primary building. Examples include, but are not limited to, detached garages (but NOT ADUs), storage sheds, barns, boathouses, and pavilions.

Alteration of a Watercourse. Through man-made work, changing the the bankfull channel such that the post-project location, orientation, or flow direction of said channel extends three or more bankfull channel widths from the pre-project channel location, or outside of the pre-project regulatory floodplain.

Article 4-400. Sections 4-400 through 4-416 of the Boulder County Land Use Code.

Basement. Any area of a building having a finished floor subgrade on all sides, where the finished floor is greater than four feet below the top of the foundation walls or greater than 2 feet below the Lowest Adjacent Grade.

Below-Grade Crawlspace. The interior space between the elevated finished floor of a building and the finished interior grade, where the finished grade is no greater than 4 feet below the top of the foundation walls and no greater than 2 feet below the Lowest Adjacent Grade.

Crawlspace. The interior space between the elevated finished floor of a building and the interior finished grade.

Critical Facilities. A structure or related infrastructure, but not the land on which it is situated, as specified in CWCB’s Rules and Regulations for Regulatory Floodplains in Colorado at 2 CCR 408-1:6, that if flooded may result in significant hazards to public health and safety or interrupt essential services and operations for the community at any time before, during and after a flood.

Habitable Space. An enclosed area having more than 20 linear feet of finished interior walls (paneling, etc.) or used for any purpose other than solely for parking of vehicles, building access or storage.

Flood Fringe. The portions of the Floodplain Overlay District that are not in the Floodway.

Floodway. The floodway depicts the most hazardous portion of the floodplain, where flood depths and velocities are greatest and damages resulting from flooding are the most catastrophic. As such, Boulder County’s development restrictions in the floodway are stricter than those within the Flood Fringe. In Boulder County, Floodway means:

1. Those portions of the FO District required for the passage or conveyance of the base flood in which waters will flow at significant depths or with significant velocities, including the channel of a river or other watercourse and any adjacent floodplain areas that must be kept free of development and other encroachments to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
 - a. The Colorado statewide standard for the designated height to be used for all newly studied reaches is 0.5 foot.

- b. For existing Floodway delineations in previously studied reaches, the designated height is that in place at the time of the study. This information is on file with the County Engineer and available upon request. Letters of Map Revision to existing Floodway delineations may continue to use the floodway criteria in place at the time of the original delineation.
2. Areas identified as floodway by the Colorado Water Conservation Board or FEMA.
3. In the foothill canyons and in any drainage above 6,000 feet (NAVD88) in elevation, as a result of the expected high flow velocities, with reference to the best terrain data available as of the last FO District update, (a) the entirety of the 1%-annual-chance (100-year) flood hazard area, or (b) as reflected on an engineering study approved by the County Engineer and available upon request.
4. In Zone A or AE areas, where the proposed development does not involve buildings or structures, then in the absence of either a specific floodway designation by FEMA or an engineering study submitted by the applicant and approved in writing by the County Engineer, the Floodway is defined as the channel or flowpath of the river, stream, or other watercourse and areas of the floodplain where the product of flood depth (in feet) multiplied by flood velocity (in feet per second) is greater than four. This formula is derived from the 1987 Colorado State University flume study. Flow depth and velocity can be determined from a number of sources, including without limitation hydraulic modeling, water surface elevation information, terrain data, and flood risk products created specifically to display depth and/or velocity.
5. Where the proposed development involves buildings or structures in the FO District and the floodway has not been previously identified, the Floodway is those portions of the FO District determined to be floodway by an engineering study submitted by an applicant and approved by the County Engineer as further described in Section 4-404(E).

In-Kind Replacement. For storm drainage systems and system components, replacement of any system or system component with the same system or component. In-kind Replacement does not include projects that will change the size or function of the system or component.

Letter of Final Determination. A letter FEMA sends to the Chief Executive Officer of a community stating that a new or updated FIRM or DFIRM will become effective in 6 months. The letter also notifies each affected floodprone community participating in the NFIP that it must adopt a compliant floodplain management ordinance by the map effective date to remain participants in good standing in the NFIP.

Letter of Map Amendment (“LOMA”). FEMA term meaning an amendment to the currently effective FEMA map, issued only by FEMA, which establishes that a property is not located in a Special Flood Hazard Area.

Letter of Map Revision (“LOMR”). FEMA term meaning an official amendment to the currently effective FEMA map, issued by FEMA, which changes flood zones, delineations and elevations.

Lowest Adjacent Grade. The lowest point of the ground level immediately next to a building.

Maintenance. Maintenance means any routine or regularly-scheduled activity undertaken to

repair or prevent the deterioration, impairment, or failure of any utility, structure, or infrastructure component. Maintenance includes activities to restore or preserve function and/or usability of a storm drainage, water delivery, or ditch system. Such activities may include, without limitation, the removal or movement of sediment, debris, and vegetation, installation of erosion and sediment control devices, stabilization of stream channel and/or water delivery channel (ditch) banks, and the replacement of structural components, so long as the work substantially conforms to the most recent County-approved design, flow condition, and vertical grade, as applicable. Maintenance does not include expansion or enlargement of a building or structure, Substantial Modifications, Substantial Improvements, total replacement of existing facilities, or total reconstruction of a facility.

Permanent. Any change or alteration expected to remain for a substantial period of time, but at a minimum will remain after permitted work is complete.

Soil Treatment Area. See Boulder County OWTS Regulations (April 2015), as amended.

4-415 Interpretation

Certain terms used in this Article 4-400 are derived from FEMA and/or CWCB regulations. The federal and state definitions of these terms may not correspond precisely to county definitions of the same or similar terms as used elsewhere in the Land Use Code and related local regulations such as the Building Code. To the extent a term is not defined in this Article 4-400, and a conflict or inconsistency in the meaning of the term cannot be resolved by the principles listed in sections 1-900 and 1-1000, the County Engineer must determine the meaning of the term by examining the following sources in the following order of priority:

1. The meaning of the term as defined in Article 4-400.
2. The meaning of the term as defined in Article 18 of this Code.
3. The meaning of the term as defined by FEMA. See 44 C.F.R. § 59.1, as amended.
4. The meaning of the term as defined by CWCB. See 2 C.C.R. 408-1:4, as amended.
5. The meaning of the term as defined elsewhere in this Code, or in another adopted Boulder County publication such as the Multimodal Transportation Standards, the Storm Drainage Criteria Manual, or the Stormwater Quality Management Permit Requirements.
6. The meaning of the term as defined in any other official document deemed a reliable source of authority given the context.

4-416 Enforcement

Upon receiving a complaint that a violation of the requirements of this Article 4-400 has occurred, the County Engineer is authorized to enforce compliance with these floodplain regulations in the same manner as other violations of the Land Use Code are enforced, as detailed in Article 17.

Changes to other parts of the Code

4-1202(C) – Board of Adjustment – Standards of Review

Replace current text with: “Additional requirements for appeals and variances under Section 4-400 of this Code (“Floodplain Overlay District”) are set forth in Section 4-408 and 4-409, respectively.”

4-800 – Site Plan Review

4-802 Applicability and Scope of the Site Plan Review Process for Development

A. Site Plan Review shall be required for (unless not required or waived pursuant to sections B and C below):

[...]

8. Any development or earthwork requiring a floodplain development permit.

B. Site Plan Review shall not be required for:

[...]

3. Restoration of a structure that has been damaged or destroyed by causes outside the control of the property owner or their agent provided the restoration involves the original location, floor area, and height. Such restoration must comply with the current provisions of the Boulder County Land Use Code other than 4-800 (also see Nonconforming Structures & Uses, Article 4-1002(D) and 4-1003(F)).

a. Such restoration must be commenced within six months after the date on which the structure was damaged or destroyed, or a latent defect discovered and completed within one year after the date on which the restoration commenced. This limitation may be extended in the case of extenuating circumstances as determined by the Director.

b. Replacement of bridges, box culverts or low-water crossings or other hydraulic structures spanning a creek or other drainage within a mapped floodplain under Article 4-400, may also be exempt from Site Plan Review under this Subsection 3., subject to administrative approval by the County Engineer for compliance with the Boulder County Storm Drainage Criteria Manual. The County Engineer may impose conditions on the construction to assure basic safety, including but not limited to requiring construction of a replacement bridge or crossing that is compliant with the Land Use Code and the Storm Drainage Criteria Manual either as a temporary or Permanent replacement hydraulic structure.

c. The provisions of this Section 4-802(B)(3) shall not apply to Substantial Improvements to buildings in the Floodplain Overlay District as provided for in Section 4-400 of this Code.

[...]

6. Any development or earthwork which the County Engineer deems eligible for a General Floodplain Development Permit.

C. Site Plan Review may be waived for the following circumstances if the Land Use Director determines that there is no potential for any significant conflict with the criteria listed in Article 4-806 of this Code:

[...]

8. Any development or earthwork requiring an Individual Floodplain Development Permit, so long as the Director consults with the County Engineer before granting the waiver.

Article 18

- Delete definition of “**Floodway**”
- Delete definition of “**Floodproofing**”
- Replace section 18-178A “**Market Value**” with:

Market value is the price which a willing buyer would pay a willing seller under normal economic conditions, based on a representative body of comparable sales at or about the date for which the market value is sought to be determined, as calculated by an independent appraisal performed by a professional appraiser, or by other accepted authoritative source such as the County Assessor’s Office. In lieu of an independent appraisal, the market value of the structure as determined from the records of the County Assessor may be used. For purposes of floodplain regulations, market value may be set according to any method approved by FEMA and explained within FEMA P-758.

- Replace section 18-206 “**Substantial Improvement**” with:
 - A. Any cumulative combination of repairs, reconstruction, rehabilitation, expansion, or improvement of a building or other structure, the cost of which equals or exceeds 50 percent of the market value of the structure either before the improvement or repair is started, or if the structure has been damaged and is being restored, before the damage occurred. Substantial improvements are calculated on a cumulative basis, beginning with improvements commenced on or after September 11, 2013.
 1. The costs of the improvement shall include, but are not necessarily limited to, all materials, labor, built-in appliances, overhead, profit, and repairs to damaged portions of the building that are done concurrent with the subject improvements.
 2. The costs of the improvement shall not include those associated with post-storm debris removal; permitting; fees, preparation of surveys, costs, plans, and or specifications; or improvements outside of the structure, such as landscaping, sidewalks, fences, or detached structures; or work under a minor

building permit exempted from floodplain development permit requirements under Article 4-400 of this Code.

B. The term substantial improvement does not include:

1. Any alteration of a structure listed on the National Register of Historic Places or on the Colorado State Historical Society’s list of historic places.
 2. Any of the following types of improvements necessary to assure safe living conditions or bring a structure into compliance with state or local health, sanitation, safety, or building codes:
 - a. Electrical repairs;
 - b. Furnace repairs or replacements;
 - c. Water heaters, boilers, and evaporative cooler repairs or replacements;
 - d. Air conditioner repairs or replacements;
 - e. Repairs or replacements to roof coverings;
 - f. Insulation or simple weatherization or energy efficiency upgrades.
 3. Costs associated with renovations or remodeling projects totaling less than \$1,000.00, as increased annually starting January 1, 2018 by the Consumer Price Index inflation factor applicable to Boulder County.
 4. Note: even though not substantial improvements, the work described above may still require an Individual FDP.
- Replace section 18-205A “**Substantial Damage**” with:

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 damage occurred.