



# Land Use

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**BOULDER COUNTY  
BOARD OF COUNTY COMMISSIONERS**

**September 1, 2016 – 11:00 A.M.**

**Hearing Room, Third Floor  
Boulder County Courthouse**

## **PUBLIC HEARING**

### **Docket DC-15-0004: Proposed Boulder County Land Use Code Text Amendments to Floodplain Regulations and related provisions**

**STAFF PLANNER:** Varda Blum, Floodplain Program Manager/Boulder County Transportation Department

## **SUMMARY OF PROPOSED CHANGES**

Staff is proposing changes to the floodplain regulations in the existing Article 4-400 (Floodplain Overlay District), Article 18 (Definitions), and Article 4-800 (Site Plan Review). Changes focus on creating transparent processes for use of best available data, clarifying existing regulations, making changes necessary to meet FEMA and CWCB minimum requirements, and associated changes to allow County staff to better protect the health, safety, and welfare of the residents and visitors to Boulder County. The proposed changes are summarized on attached Table 1. The Board of County Commissioners authorized staff to pursue these text amendments on September 17, 2015. No new boundaries of the Floodplain Overlay district are being proposed at this time.

This memorandum includes a listing of the outreach performed followed by a brief summary by topic of the proposed code changes, the comments received on the proposed change, and staff responses to those comments.

## **PUBLIC NOTICE AND INVOLVEMENT**

Boulder County floodplain program staff sought public involvement and comment and provided notification of these proposed Land Use Code text amendments in the following ways:

1. April 28, 2016 – Draft of proposed changes sent via email to applicable County referral agencies.
2. May 9, 2016 – Draft of proposed changes sent via email to CWCB and FEMA Region 8 for comment. Two subsequent conference calls held with CWCB and FEMA representatives. These agencies reviewed the proposal, provided comments, and noted no conflicts.
3. A specific website focused on the proposed floodplain code updates and floodplain remapping has been active since May 2016.  
[www.bocofloodplainremapping.com](http://www.bocofloodplainremapping.com) .
4. June 1, 2016 - Public notice for the June 15, 2016 Boulder County Planning Commission Hearing posted in the Daily Camera and the Times Call.
5. June 7, 2016 – Notice of the June 15, 2016 Boulder County Planning Commission Hearing sent via email to five watershed coalitions representatives (Fourmile, St Vrain, Lefthand, Little Thompson, Coal Creek) to distribute to their members.
6. June 8, 2016 – Notice of the June 15, 2016 Boulder County Planning Commission Hearing was sent via email to 862 email addresses comprising the Boulder County Floodplain ListServ and to 987 email addresses comprising the Boulder County Land Use Code ListServ.
7. June 8, 2016 – Docket information including a first draft of the proposed text amendments and staff’s formal recommendation to the Planning Commission was posted to the Boulder County Development Applications webpage at:  
<http://www.bouldercounty.org/property/build/Pages/lucodeupdatedc150004.aspx>.
8. June 9, 2016 – A newsletter focused on floodplain remapping and the proposed floodplain code updates was distributed via the Flood Recovery listserv (862 recipients) and the Floodplain Remapping listserv (321 recipients).
9. June 15, 2016 – First Planning Commission Hearing to consider proposed floodplain code changes. At the suggestion of staff, the decision was made to table the docket for two months to allow for additional outreach and public comment. Public comment was taken at the hearing.
10. June 20, 2016 – Boulder County floodplain program staff met with the Watershed Coordinators of the Watershed Coalitions, to discuss floodplain remapping and proposed floodplain code updates, including the best way to distribute information to and involve Coalition members in reviewing the proposed code changes.
11. June 29, 2016 -- Boulder County floodplain program staff presented an update on the floodplain remapping and proposed floodplain code updates to the St Vrain Watershed Coalition Advisory Council Meeting (approximately 20 attendees).
12. July 14, 2016 – A public meeting was held in Longmont addressing the floodplain remapping and proposed floodplain code updates with an attendance of 50 people.

13. July 21, 2016 -- The proposed floodplain code updates were distributed to various subject-matter experts who routinely do work in Boulder County (septic engineers, water resource consultants, architectural firms, building firms, and civil/structural engineering firms).
14. July 26, 2016 – A public meeting was held in Boulder addressing the proposed floodplain code updates with an attendance of 26 people.
15. The public meetings listed in #12 and #14 above were advertised via the Flood Recovery listserv (862 recipients) and the Floodplain Remapping listserv (321 recipients).
16. Notice of the public meetings listed in #12 and #14 was also distributed by the St Vrain Creek Coalition, the Fourmile Watershed Coalition, the Lefthand Watershed Oversight Group, the Little Thompson Watershed Restoration Coalition and the Coal Creek Canyon Watershed Partnership.
17. July 26, 2016 -- A meeting was held with three representatives from the Lefthand Watershed Oversight Group and the Fourmile Watershed Coalition to discuss comments on the proposed floodplain code updates.
18. July 26, 2016 -- A second newsletter focused on floodplain remapping and the proposed floodplain code updates was distributed via the Flood Recovery listserv (862 recipients) and the Floodplain Remapping listserv (321 recipients).
19. July 5 and 22, 2016 -- Articles about the proposed floodplain code updates were published in the Boulder Daily Camera and the Longmont Times-Call.
20. July 28, 2016 – A draft of the proposed floodplain code updates was sent again via email to applicable County referral agencies.
21. August 3, 2016 - Public notice for the August 17, 2016 Boulder County Planning Commission Hearing was posted in the Daily Camera and the Times Call.
22. August 5, 2016 – Notice of the August 17, 2016 Boulder County Planning Commission Hearing was sent via email to five watershed coalitions representatives (Fourmile, St Vrain, Lefthand, Little Thompson, Coal Creek) to distribute to their members.
23. August 5, 2016 – Notice of the August 17, 2016 Boulder County Planning Commission Hearing was sent via email to 1,597 email addresses comprising the Boulder County Flood Recovery and Boulder County Land Use Code ListServs.
24. August 10, 2016 – Docket information including a draft of the text amendments and staff's formal recommendation to the Planning Commission was again posted to the Boulder County Development Applications webpage at:  
<http://www.bouldercounty.org/property/build/Pages/lucodeupdatedc150004.aspx>
25. August 17, 2016 – Second Planning Commission Hearing to consider proposed floodplain code changes. Public comment was taken at the hearing.
26. September 1, 2016 – A public hearing before the Board of County Commissioners is scheduled. Public comment will be taken at this hearing.

## **SUMMARY OF PROPOSED CHANGES and COMMENTS RECEIVED:**

Below is a discussion by topic of the proposed code changes, summary of comments received, and staff responses to comments. The existing code is attached to this memo as Exhibit A. The proposed code is attached as Exhibit B. The proposed code with redline is attached as Exhibit C. The originals of the written comments are included in Exhibit D. A full listing of the individual comments received, including both written comments and comments received verbally at public meetings, with staff responses, is attached in Exhibit E. Staff is very appreciative of the time and effort residents and referral agencies have committed to reviewing and providing feedback.

### **Designation of Official Maps**

*The first step in planning a project that may be in the floodplain is to check the official maps to decide whether the proposed project is in the FO district. Proposed changes to the code related to official maps are in proposed Section 4-403 and include changes to what data makes up the official map of the FO district, and clarification of the processes for interpreting and amending that map.*

Staff proposes to create a process to adopt best available data defining the 1% chance floodplain into a supplementary Boulder County floodplain. The County Engineer currently has the authority to use best available data, however there is no public process to adopt that data. The proposed change is intended to make the process of using best available data more transparent.

#### *Comments Received and Responses to Comments*

Comment Summary: ‘If an area has not seen flood impacts from the historical floods then it is most likely not in the floodplain.’ The implication of this comment is that analysis performed to map the 1% chance (100-year) floodplain should be directly modified to reflect the actual experience of historical floods.

Staff Response: We encourage all members of the community to review any new floodplain maps proposed for addition to the Boulder County 100-year floodplain, especially for inclusion of all relevant data and reflection of existing local topography and other site specific parameters. Input from the community, including existing site specific survey, as well as anecdotal description of experienced flooding is important, and will result in a technical review of the potential need for additional ground survey, revised numerical parameters, etc. For the upcoming State-sponsored CHAMP remapping effort, outreach is planned to solicit this type of input and review.

However, it is important to note that it is not a given that if flood impacts have not yet historically occurred that the location in question should be indicated as outside of the 1% chance floodplain on the basis of that history alone. Not all mapped areas have experienced a flood either in September 2013 or on historical record that was as large or larger than a 1% chance event. In addition, during historical flooding many unpredictable events occur that can result in water being diverted from predicted paths (e.g. debris blockage). The numerical model with accurate site specific parameters informed by the community is our best indicator of the predicted water surface elevation and extents of the 1% chance floodplain.

Comment Summary: ‘The proposed code changes do not make requirements for actual notification of property owners when changes to the FOD affect their property’.

Staff Response: The proposed code changes require that a change in the boundary of the FO District which result in a portion (or all) of a parcel being added to or removed from the regulatory floodplain requires review and approval of a Zoning Map Amendment. Section 4-403.D.2. Zoning Map Amendments require notice and public hearings before the Planning Commission and the Board of County Commissioners, as further described in sections 4-1100 and 3-205.

The only exception to this requirement for notice and hearings is for changes to the DFIRM. Under the proposed code language in section 4-403.D.1, when FEMA issues a Letter of Final Determination associated with any map action, the FEMA Floodplain within the FO District will be deemed automatically updated. See also Section 4-403.A.1 (incorporating by reference the DFIRM, as amended, in effect on the date of complete permit application). Boulder County is required to adopt the DFIRM, so public hearings at the county level would have a predetermined outcome and, therefore, do not seem like an appropriate use of public resources. Property owners concerned about changes FEMA is making will, however, have notice and the opportunity to comment to FEMA prior to FEMA’s final action.

### **Floodplain Development Permits**

*Once a project is determined to be within the FO district, the next step in project development is to determine whether the proposed activity is allowed within the portion of the floodplain (floodway or flood fringe) proposed and what requirements apply for the needed floodplain development permit application.*

Staff proposes to generally maintain existing floodway and flood fringe restricted activities and uses, clarify the restrictions against new development in the floodway intended for human occupancy and incorporate CWCB-recommended restrictions on development of new critical facilities in the floodplain.

#### *Comments Received and Responses to Comments*

Comment Summary: ‘This needs to address watering tanks, loafing sheds, etc. that are part of grazing operations as well as the materials used in farming.’

Staff Response: Staff received many comments on various sections of the floodplain regulations requesting that the proposed code changes be reconsidered with the needs of agricultural producers taken into consideration. Staff went through the entire proposed code and clarified and amended many provisions to specifically address various allowable farming activities. All analysis of potential allowances for agricultural activities were done while making sure the county maintained compliance with the NFIP minimum requirements.

Comment Summary: ‘This section outlines a broad and subjective list of criteria that the county may use to reject a permit’

and

Comment Summary: ‘This revision attempts to add so much detail that it may make things less clear, because you can’t possibly cover every development scenario. A how-to or technical guide that dives into specifics, while keeping the code more general, would be the better approach.’

Staff Response: Staff received both comments that particular code provisions were too vague and subject to broad interpretation to the detriment of the applicant for a floodplain development permit and that other provisions were too detailed and would result in too narrow interpretation and result in prohibition of activities not intended to be prohibited. Staff reviewed all sections where such comments were made and noted in the detailed list of comments received (Exhibit E) how individual comments were addressed.

Comment Summary: ‘We should consider making all proposals for Critical Facilities reviewable on a case-by-case basis rather than just those above 6,000 feet and prohibiting all facilities below 6,000 feet’

Staff Response: The CWCB ‘Rules and Regulations for the Designation and Approval of Floodplains and of Storm or Floodwater Runoff Channels in Colorado’ require that Colorado communities that participate in the NFIP specifically regulate critical facilities by either requiring greater elevation of the facility above the predicted water surface elevation of the 100-year flood or by prohibition of such facilities within the floodplain. Staff believes that there is adequate room outside of the floodplain in the plains and that locating critical facilities outside of the floodplain provides better protection for community health and safety over requiring greater elevation of a facility. Thus, staff recommends retaining the prohibition of new or expanded critical facilities within the plains floodplain. Should there be a particular request for a new or expanded critical facility within the floodplain in the plains, and allowing that location is the minimum necessary exception to provide relief, the applicant can apply for a variance. The variance process will allow a public review for the public critical facility not afforded by a case-by-case analysis undertaken by the County Engineer.

### **General and Individual Floodplain Development Permit**

*Boulder County would like to achieve the goal of protecting against adverse impacts to floodplain areas, while lessening the review required for minimal or no impact development within the floodplain.*

Staff proposes to break up the existing FDP into General FDP (4-404.1) and Individual FDP (4-404.2), in a manner similar to the Clean Water Act Section 404 permit program, administered by the U.S. Army Corps of Engineers. Individual FDPs will be required for development with potentially significant impacts to people and property and General FDPs will be issued for development that pose minimal or no impacts.

#### *Comments Received and Responses to Comments*

Comment Summary: The general permit concept was received uniformly favorably with most comments and questions on the proposed text requesting clarification of terms used in the text of 404.1 (e.g. ‘debris’, ‘vegetation maintenance’, ‘utilities’, etc.) to describe which projects qualify for a general permit.

Staff Response: Responses to individual comments are listed in Exhibit E and describe the action taken for each clarification request. Some terms were further defined or clarified in the code and others were not. This is in keeping with the general balancing throughout of when to be specific vs. when to be more general.

Comment Summary: Regarding individual permit submittal requirements: ‘These requirements seem extensive and expensive. Are they in addition to what LU would require for a Building Permit?’

Staff Response: We have updated the submittal section to break out submittal requirements by project type and to eliminate any remaining redundant items. We believe these submittal requirements to be necessary to adequately review proposals for development in the floodplain, per the NFIP. Because a Building Permit and FDP look at different aspects of a proposed project, they each have their own submittal requirements.

Comment Summary: ‘For the General FDP notification, the applicant’s project description should include discussion on materials to be used and expected impact to channel and floodplain’

Staff Response: This comment resulted from subject matter expert review and the suggestion has been incorporated into the submittal requirements for general FDPs. It is the minimum necessary to protect community health and safety and natural functions of streams.

### **Flood Protection Measures**

*Depending on the type of project, an allowable activity or use may have required flood protection measures. These measures depend on whether a proposed project is related to a new or existing structure, whether the project involves a substantial improvement or modification, and the type of structure that may be involved (residential, non-residential, accessory).*

The most significant change is that staff proposes an addition of a requirement that substantially damaged structures in the floodway adhere to a rebuilding protocol requiring relocation out of the floodway; engineered foundations using post, columns, or piles; or elevation on stem walls parallel to the direction of flow. Relocation and the proposed types of foundations will result in more resilient rebuilt structures. While the adopted code requires rebuilt substantially damaged structures to be elevated, adequate detail on evaluation of relocation options and engineering methods is lacking.

#### *Comments Received and Responses to Comments*

Comment Summary: Many comments and questions were received concerning constraints on placement of accessory structures within the floodplain and clarification of what constitutes an accessory structure, whether a temporary agricultural structure can be placed in the floodway, and whether an elevation certificate is needed for an accessory structure.

Staff Response: The proposed code has been revised to clarify the definition of accessory structure, now includes allowances for temporary agricultural structures in the floodway under certain conditions, and does require as per the NFIP minimum requirement an elevation certificate for all new and substantially improved accessory structures in the floodplain.

## **Nonconforming Structures and Uses**

*Another step in the process is to determine whether the proposed project involves a nonconforming structure and/or a nonconforming use and/or a change of use.*

Existing adopted regulations addressing nonconforming structures and uses (4-408) are generally maintained in the proposed code section (now 4-413) with additions of:

- An explicit allowance for relocation of a nonconforming structure without terminating the right to continue using that structure, so long as the relocation reduces the potential risks associated with future flood or other natural hazard events, and
- Limiting to five years, with a one year possible extension, the time period allowed for completion of repair work on a substantially damaged nonconforming structure in the floodway.

### *Comments Received and Responses to Comments*

Comment Summary: ‘Limiting the extension period to a single one-year extension could be detrimental to those already in the building process’.

Staff Response: The proposed code has been revised to allow five years to begin the work with a possible one year extension. This will lengthen the period from the previously proposed five year time period to complete the repair work.

## **Review, Appeals, Variances, Enforcement**

*Throughout the proposed process of applying for an FDP, whether General or Individual FDP, the County Engineer (represented by the Transportation floodplain team) has the authority to request additional information, make determinations, and in general, enforce the requirements of the floodplain regulations. It is important for the applicant to understand the authority delegated to the County Engineer and the various methods which exist for the floodplain regulations to be varied, for determinations to be appealed, and for the regulations to be enforced.*

In the proposed floodplain regulations, previously existing code sections have been reorganized to more clearly present the authority of the County Engineer and the procedures for appealing determinations or requesting variances.

### *Comments Received and Responses to Comments*

Comment Summary: Staff received comments mainly asking for clarification of the requirements for public notice for floodway permits.

Staff Response: Section 4-407.D of the current code requires floodway permit notification through newspaper notice, postcards to adjacent property owners, and to the BOCC for review and potential call up at a public hearing.

Section 4-407 of the proposed code will instead require floodway permit notification through posting on the county website and postcards to adjacent property owners. Both the web notice and the postcards will include information about how the permit can be called up through appeal to the Board of Adjustment. This is consistent with proposed Section 4-408 ‘Appeal of County Engineer Determination’.

### **Definitions (including 4-414 and Article 18)**

This section's most significant additions/changes include definitions of Maintenance, Critical Facilities, and Floodway, including a description of acceptable methods for defining a floodway in areas where a floodway has not be previously-defined.

#### *Comments Received and Responses to Comments*

Comment Summary: 'The definitions of "floodway" and "flood fringe" require the assistance of a hydrologist to determine what aspects of the code apply to any property covered by the FOD'

Staff Response: The floodway definition exists mainly for areas without a floodway study. Previously, in areas below approximately 6,000 ft. elevation, the applicant was required to perform an engineering study to delineate the floodway. The proposed changes make it possible to delineate by definition a solution that is considerably less expensive than previously for delineating floodway where none has been designated. Also, in areas of the new CHAMP maps, areas without floodway delineation will be mapped by these definitions as Boulder County floodway so the extents of the floodway are clear.

Comment Summary: 'It would be helpful if you included a list of acronyms in the definitions'.

Staff Response: Acronyms are identified as they are used in the body of the code and where necessary expanded for clarity.

### **Changes to Land Use Site Plan Review (4-800)**

*The existing Land Use Code requires Site Plan Review prior to FDP approval for any development or earthwork which requires a floodplain development permit.*

In the adopted code, there are limited exceptions to this SPR requirement (e.g. the replacement of bridges, box-culverts, or low water crossings is exempted from the SPR process). Staff believes that modifications to the SPR requirement are needed to improve efficiency in reviewing and permitting projects in the floodplain with obviously minimal impact.

To mirror the creation of the general FDP to streamline the floodplain review process, a provision has been added to the SPR regulations in Article 4-800 to exempt any development or earthwork project which is eligible for a general FDP from having that FDP be the only reason that SPR is required. A provision has also been added to Article 4-800 to allow the review of individual floodplain development permits through the shorter SPR-Waiver process where considered appropriate by the Director of Land Use and the County Engineer.

#### *Comments Received and Responses to Comments*

No comments were received on this proposed revision.

## **General Comments and Comments Received on Unchanged Provisions of LUC 4-400**

### *Comments Received and Responses to Comments*

In addition to comments on the proposed changes to the floodplain regulations that are described in the sections above, staff received comments on floodplain management and current regulations that are not proposed for change. General comments on floodplain regulations and specific comments about unchanged provisions in the floodplain regulations are noted with associated responses on the attached list of comments received (Exhibit E). Several comments are further addressed below.

We received one community member comment asking for additional meetings about the proposed code changes and additional time for review.

The first draft of the proposed text amendments was released on June 8, 2016 and, as described above on the second and third page of this memo, many outreach activities have occurred, which provided opportunity for questions and review.

The majority of these proposed text amendments do not add new requirements for property owners. As a result, staff does not recommend additional time for community review of the proposed text. However, staff does agree that general outreach to address questions and misconceptions about participation in the NFIP, floodplain management, and the county's floodplain regulations is needed. In response to this need, staff has already started planning the creation of a FAQ about floodplain regulations to be posted on the county's website and distributed to the community. Floodplain program staff will also incorporate code discussion in upcoming outreach and meetings about floodplain remapping.

We received several questions about floodplain regulation revisions for septic systems, inquiring whether changes to the floodplain regulations currently being proposed apply retroactively.

The specific questions are answered in Appendix E. In general, floodplain development permit applications are regulated by the code in place at the time of permit submittal. Septic system design requirements for the floodplain are not retroactive and no upgrading is being required for currently functioning septic systems. For questions regarding rebuilding nonconforming structures and uses, additional information can be found in proposed section Nonconforming Structures and Uses (Section 4-413).

Several comments were received from the Lefthand Watershed Oversight Group (LWOG) concerning how public infrastructure bridges are regulated by the floodplain code.

Many of the questions received on this docket about the existing public infrastructure bridges along Lefthand Creek are not related to this docket, as these bridges were designed and built to meet regulations and design standards in place at the time of their construction. This topic is being discussed in other forums.

Proposed new bridges are subject to the existing Land Use Code provisions in place at the time that the design comes in for permitting. Design standards are set by the Boulder County Storm Drainage Criteria Manual.

There were many emailed comments and questions received at the Open Houses about the existing requirement that substantial improvement be calculated as a cumulative total since

September 11, 2013. Residents requested that the cumulative nature of the calculation be reconsidered.

The existing adopted code provision for cumulative substantial improvement is not new and consideration of whether to change that provision was not within the scope of these floodplain regulation amendments. Staff did evaluate these regulations in Spring 2014 and decided to continue with the previously existing calculation method with a change to September 11, 2013 for the date on which the cumulative percentage starts accumulating. Staff will re-evaluate the necessity and provisions of cumulative substantial improvement regulations in a future floodplain code amendment.

We received several questions about floodplain regulations for rebuilding after disasters and many requests have been received for post-disaster specific floodplain regulations.

Creating post-disaster specific floodplain regulations was not within the scope of this floodplain code amendment. Staff has noted these comments and will address this need in studies for future floodplain code amendments.

When disasters occur, the county can enact disaster declarations, to address immediate disaster recovery needs, and county code can be revised as appropriate, which occurred after the September 2013 flood event. Due to the difficulty in predicting the particular needs of future disaster recovery, it is likely that individual post-disaster code sections, similar to the Article 19 sections addressing the Fourmile and the September 2013 flooding, will be created as needed.

### **Additional Public Comment**

Staff will summarize the nature and extent of public comments received after August 25<sup>th</sup> and prior to the September 1st Board of County Commissioners hearing at the September 1st hearing.

### **PLANNING COMMISSION**

Planning Commission held public hearings on this docket on June 15, 2016 and August 17, 2016. On August 17, 2016, the Planning Commission voted unanimously (6-0) to approve and recommend approval of the docket to the Board of County Commissioners.

## **TEXT AMENDMENT CRITERIA ANALYSIS**

Article 16-100(B) contains the criteria for amending the text of the Land Use Code. Staff finds that these criteria are met in the context of this Docket, as follows:

### **1. The existing text is in need of amendment:**

Staff has identified the goals of this docket and the reasons why these amendments should be made. Those goals are:

- To make more transparent and less cumbersome the use of best available floodplain data.
- To create a clear regulatory framework which better protects the health and safety of County residents and to address the public's need for more easily understood floodplain regulations.
- To better address the impacts and potential hazards that have become evident since the 2013 flood in Boulder County.
- To revise the County's local floodplain regulations to better align with state and federal requirements.

### **2. The amendment is not contrary to the intent and purpose of this Code:**

The amendments are not contrary to the intent or purpose of the Code.

### **3. The amendment is in accordance with the Boulder County Comprehensive Plan:**

The amendments are in accordance with the Boulder County Comprehensive Plan.

## **RECOMMENDATION**

**STAFF RECOMMENDS THAT THE BOARD OF COUNTY COMMISSIONERS APPROVE Docket DC-15-0004: Land Use Code Text Amendments to Floodplain Regulations and related provisions**

Staff recommends an effective date of the new regulations of October 1, 2016.

### **Attachments:**

- Exhibit A – Existing adopted floodplain regulations in Articles 4-400
- Exhibit B – Final September 1, 2016 proposed revised floodplain regulations in Articles 4-400, definitions in Article 18, and Site Plan Review regulations in Article 4-800. No redline.
- Exhibit C – Proposed September 1, 2016 proposed revised floodplain regulations in Articles 4-400, definitions in Article 18, and Site Plan Review regulations in Article 4-800 with redline comparison to Exhibit A, existing adopted floodplain regulations.
- Exhibit D – Internal, Public, and Subject Matter Expert Written Comments received regarding Docket DC-15-0004
- Exhibit E – Listing of all comments received and responses to comments.



Table 1 -- Proposed Text Amendments to Boulder County Land Use Code Floodplain Regulations (4-400): DC-15-0004

ID	Current Section #	New Section #	New Section Name	Topic	Description	Clarification of Existing content <sup>1</sup>	New content <sup>2</sup>	Minimum NFIP/State Requirement vs. Local Standard <sup>3</sup>
1	406[A][2]	403[A][2]; 403[C]	Official Map	Use of Best Available Data	Clarified the County's existing ability to use Best Available Data for permitting/development decision making.	X		Minimum Req/Local Standard
2	402[A] and [B]	403(A)	Official Map	FEMA and Boulder County Floodplains	Created Boulder County Floodplain/Floodways, representing locally-adopted Best Available Data. Creates public process and regulation transparency.	X		Local Standard
3	402[B]	403[A][1]; 403[D][1]	Official Map	Automatic Adoption of FEMA Floodplains	When FEMA issues new maps, the Floodplain Overlay District is automatically updated. Streamlines FEMA-mandated local adoption of DFIRM data. Public review/comment process is required for preceding Boulder County Planning Commission and BOCC hearings and is also built in to FEMA process.		X	Local Standard
4	402[F]	403[D]	Official Map	Floodplain Overlay District updates	Clarified language on how to update Floodplain Overlay District (both FEMA and Boulder County floodplains).	X		Minimum Req/Local Standard
5	407[B][7]	404.2[D] and [E]	Submittal Requirements	Hydraulic Modeling Requirements	Clarified hydraulic modeling requirements for No Rise/CLOMR submittals for projects in the floodway.	X		Minimum Requirement
6	402[E]	404.2[B][7]	Submittal Requirements	Watercourse Alteration	Clarified minimum NFIP requirement for permitting of watercourse alteration. NFIP and State require that flood conveyance is maintained; added maintenance plan requirement to comply.	X	X	Minimum Requirement
7	407[B][7]	404.2[D]	Floodplain Development Permits	Hydraulic Modeling/CLOMR Requirements	Clarified FEMA CLOMR requirements for floodway/flood fringe encroachments. Clarified procedure (local CLOMR) for proposed development in locally-adopted Boulder County (not FEMA) floodways.	X	X	Minimum Req/Local Standard
8	403[A]	404[B]	Floodplain Development Permits	Floodway Restrictions	Clarified existing floodway use/development prohibitions, e.g. new structures/additions, conversion to living space/primary use space, and overnight use (camping).	X		Minimum Req/Local Standard
9	-	404.1	General Floodplain Development Permit	Boulder County General Floodplain Development Permit	Created General Floodplain Development Permit concept and process for certain projects (e.g. utility infrastructure, maintenance, landscaping). Ensures we meet NFIP minimum requirements for permitting ALL development.	X	X	Minimum Req/Local Standard
10	-	404.2	Individual Floodplain Development Permit	Boulder County Individual Floodplain Development Permit	If work is not covered by General Floodplain Development Permit, then Individual Floodplain Development Permit required (This is new only because concept of General Floodplain Development Permits new).	X	X	Minimum Req/Local Standard
11	Article 18-155	405[A]	Flood Protection Measures	Flood Protection Elevations	Clarified Flood Protection Elevation definition for various flood risk zone designations. Added definition for Flood Protection Elevation in Zone A.	X	X	Local Standard
12	405	405[B] and [C][1]	Flood Protection Measures	Minimum General Requirements	Clarified minimum NFIP and State general requirements for flood protection. Language taken from Colorado State Model Floodplain Ordinance.	X		Minimum Requirement
13	405[C][5]	408[C][1][f]	Flood Protection Measures	Elevation requirement	Clarified that per NFIP requirement, for new construction and Substantial Improvements ALL Service Equipment must be elevated to Flood Protection Elevation.	X		Minimum Requirement
14	405[A] and [B]	405[C]; 405[D]; 413	Flood Protection Measures	New vs. Existing Structures	Clarified flood protection requirements for New Construction vs. Existing Structures. 'New Construction' includes Substantial Improvements to Existing Structures. Existing Structures are referred to 413- Nonconforming Structures and Uses.	X		Minimum Requirement
15	405[B]	405[C][2] -[3]	Flood Protection Measures	Structure Type	Clarified flood protection requirements for different structure types (Residential, Non-Residential).	X		Minimum Requirement
16	405[B][2][b]	405[C][3][B][i][f]	Flood Protection Measures	Accessory Structures	Added Non-Conversion Agreement for accessory structures built with their lowest floors below the Flood Protection Elevation. NFIP does not allow for the conversion of accessory use space to living space unless it is elevated appropriately.	X	X	Minimum Req/Local Standard
17	405[B][2][A]	405[C][3][B][iii]	Flood Protection Measures	Accessory Dwelling Units	Clarified that accessory structures with living space on the second floor are regulated as residential structures. NFIP would consider this a residential structure with enclosure.	X		Minimum Requirement
18	Article 18-206	413[B]	Flood Protection Measures	Substantial Improvements	Clarified process for tracking improvements to existing structures and triggers for flood protection requirements. Improvement tracking remains cumulative starting 9/11/2013.	X		Minimum Req/Local Standard
19	-	413[B][6]	Flood Protection Measures	Existing Structures in the Floodway	Added retrofit design requirements for Substantial Improvements/repair of Substantial Damage for existing structures in the floodway, given flood damages experienced in the 2013 flood event.		X	Local Standard
20	-	405[E]	Flood Protection Measures	Critical Facilities	Added new critical facility prohibition in Floodplain Overlay District below 6,000 feet. Above 6,000 feet elevation, critical facilities approved on case-by-case basis. State requires either A) location outside of floodplain or B) additional freeboard.		X	Minimum Req/Local Standard
21	405[B][10]	405[G]	Flood Protection Measures	RV Requirements	Clarified flood protection requirements for RVs stored in the floodplain. Language is taken from CWCB State Model Floodplain Ordinance.	X		Minimum Requirement
22	405[C][4]	405[H]	Flood Protection Measures	On-site Wastewater Treatment System requirements	Added Onsite Wastewater Treatment System (OWTS) flood protection requirements (New/Repair/Replacement), including minimum NFIP standards for septic systems as well as additional local requirements based on lessons-learned from the 2013 flood event.		X	Minimum Req/Local Standard
23	405[B][8]	405[I]	Flood Protection Measures	Propane/Storage tank requirements	Added language addressing flood protection of propane and other storage tanks, which are similar to septic tank requirements. Based on FEMA minimum requirements.		X	Minimum Requirement
24	409[B][2]	405[J]	Flood Protection Measures	Historic Structures	Added exemption language for structures listed on the State or National Historic Register, or for those that have obtained County Landmark status.		X	Minimum Requirement
25	-	411	Permit Expiration	Permit Expiration	Clarified process to change project design or re-issue a Floodplain Development Permit.	X		Local Standard
26	408[A]	413[B]	Non-conforming Structures & Uses	Structures in Floodway	Clarified allowable improvements to non-conforming structures in the floodway. Aligns with other sections of the Boulder County Land Use Code.	X		Local Standard
27		413[B]	Nonconforming Structures & Uses	Floodway damages	Added deadline for repair/replacement of damaged homes in the floodway. Aligns with other sections of the Land Use Code.		X	Local Standard
28	Article 18	414	Definitions	Addition of or revision to certain definitions	Clarified and added required NFIP/State terminology/definitions (e.g., critical facilities). Added County-specific terminology/definitions (e.g., Floodway; Maintenance; Watercourse Alteration).	X	X	Minimum Req/Local Standard

1 Clarification of Existing Content indicates code language, requirements, or policy already in place within the existing Land Use Code  
 2 New Content indicates code language, requirements, or policy that are being proposed as a part of this text amendment to the Land Use Code  
 3 Minimum NFIP/State Requirement vs. Local Standard indicates the source of the code language, requirement, or policy.

# EXHIBIT A

## **Boulder County Land Use Code Article 4 excerpts:**

4-400 Floodplain Overlay District through

4-409 Appeals and Variances

## 4-400 Floodplain Overlay District

Purpose: 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 human life and health; 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; and to prevent or minimize damage to public facilities and utilities; and to aid the public in determining if a property is in a potential flood area.

### 4-401 Application and Liability

- A. The provisions and regulations of this section shall apply to all lands within the unincorporated area of Boulder County which are located within the Floodplain Overlay (FO) Zoning District. If a structure, lot, or other parcel of land lies partly within the FO district or the floodway, the part of such structure, lot, or parcel lying within the district or floodway shall meet all requirements for such district or floodway as set forth in this Code.
- B. The degree of flood protection intended to be provided by this section has been determined to be reasonable for regulatory purposes and is based on engineering and scientific methods of study. Floods of greater magnitude may occur and 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 does not imply that the areas outside floodplain area boundaries or land uses permitted within such areas will be free from flooding or flood damages or that compliance with these regulations will prevent any or all damages from flooding. Nor shall this article create a liability on the part of, or a cause of action against, the County of Boulder or any officer or employee thereof for any flood damages that may result from reliance on this article or any administrative decision.
- C. The floodplain regulations of this code are not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where these regulations and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

### 4-402 Designation of Official Maps

- A. The following reports designate the location and boundaries of the FO district.
  1. That portion of the Floodplain study entitled 'Floodplain Information/Boulder Creek and South Boulder Creek (Boulder County Volume II),' August 1969, prepared for the Denver Regional Council of Governments by the Department of the Army, Omaha District, Corps of Engineers, which includes all of South Boulder Creek and Boulder Creek in the unincorporated areas west of Valley View Road and east of the Boulder City Limits.
  2. 'Floodplain Information/Lower St. Vrain Creek (Boulder County Volume III),' June 1972, prepared for the Urban Drainage and Flood Control District/the City of Longmont/Boulder County by the U.S. Army Corps of Engineers (Omaha, Nebraska).
  3. 'Floodplain Information Report/Lefthand Creek, Volume 1 (Mouth to Foothills Highway),' December, 1981, prepared for Boulder County, City of Longmont and the Colorado Water Conservation Board by Gingery Associates, Consulting Engineers.
  4. 'Floodplain Information Studies/Upper Lefthand Creek, Volume II, (Foothills Highway to Peak to Peak Highway),' August, 1983, prepared for Boulder County and the Colorado Water Conservation Board by Simons, Li and Associates, Consulting Engineers.
  5. 'Floodplain Information Report/Upper Boulder Creek and Fourmile Creek,' December, 1981, prepared for Boulder County and the Colorado Water Conservation Board by Gingery Associates, Consulting Engineers.
  6. 'Flood Hazard Area Delineation/Lower Boulder Creek (Valley View Road to Boulder - Weld County Line),' March, 1983, prepared for Urban Drainage and Flood Control District, Colorado Water Conservation Board and Boulder County by Muller Engineering Company, Inc., Consulting Engineers.
  7. That portion of the floodplain study entitled, 'Flood Hazard Delineation/Boulder Creek and Dry Creek (Number Three),' June, 1975, for Urban Drainage and Flood Control District and Boulder County by Leonard Rice Consulting Water Engineers, Inc., which includes Dry Creek Number Three.
  8. 'Flood Hazard Analysis/Coal Creek and Rock Creek, Boulder and Weld Counties, Colorado,' October, 1976 prepared by U.S. Department of Agriculture, Soil Conservation Service in cooperation with the Colorado Water Conservation Board, Urban Drainage and Flood Control District, Coal Creek Water Users Association, Boulder County and Weld County.
  9. 'Floodplain Information/Dry Creek (Number Two) Boulder County - Weld County, Colorado,' June, 1978, prepared for Boulder County, Weld County and Colorado Water Conservation Board by the Department of the Army, Omaha District, Corps of Engineers.
  10. 'Floodplain Information, Flood Control and Floodplain Management Plan for St. Vrain Creek at Longmont, Colorado,' April, 1981, prepared for City of Longmont, Boulder County and the Colorado Water Conservation Board by Water Resource Consultants, Inc.

11. 'Floodplain Information and Flood Control and Drainage Plan/Dry Creek Number One,' April, 1980, prepared for Boulder County, City of Longmont and the Colorado Water Conservation Board by Water Resource Consultants.
  12. 'Floodplain Information Report/St. Vrain Canyon Upstream of Lyons, Boulder County, Colorado,' October, 1978, prepared for Boulder County and the Colorado Water Conservation Board by Camp, Dresser and McKee, Inc.
  13. That portion of the study entitled, 'Floodplain Information/Big Thompson River, Loveland to the Larimer - Weld County Line, Colorado/Little Thompson River, Boulder and Larimer Counties Near Berthoud, Colorado,' June, 1977, prepared for Larimer County, Boulder County, Larimer-Weld Council of Governments and the Colorado Water Conservation Board by the Department of the Army, Omaha District, Corps of Engineers, which includes the Little Thompson River in Boulder County.
  14. 'Floodplain Information, Flood Control and Floodplain Management Plan for Coal Creek at Erie, Colorado,' August, 1980, prepared for Boulder County, Weld County, and the Town of Erie and the Colorado Water Conservation Board by Water Resource Consultants.
  15. That the portion of the Floodplain study entitled 'South Boulder Creek Flood Hazard Delineation,' July 1986, prepared for the Urban Drainage and Flood Control District and Boulder County in cooperation with the Colorado Water Conservation Board, which includes South Boulder Creek from Eldorado Springs to the Colorado and Southern Railroad (C&S R.R.) crossing, approximately 1100' downstream from Arapahoe Road (S.H. 7).
- B.** The maps in these reports depicting the floodplain for the base flood shall be considered the official maps for the purposes of locating the FO district and establishing those areas affected by the provisions and regulations of this Section. These maps and reports, together with all amendments, explanatory matter, technical addenda, water surface elevations, profiles, cross sections where available, and the 'Flood Insurance Study,' effective December 18, 2012, and the Flood Insurance Rate Maps of Boulder County as prepared by the Federal Emergency Management Agency are incorporated by reference into this Code. The location and boundaries of the FO district established by this Section are also incorporated into this Code, and are depicted upon the official zoning district maps.
- C.** The County Engineer shall keep copies of the reports cited in Section 4-402(A) on file and open to public inspection.
- D. Interpretation of Official Maps**
1. Where interpretation is needed as to the exact location of the boundaries of the FO district, the County Engineer shall make the necessary interpretation by referring, as necessary, to the engineering study upon which the maps and elevations are based, to the professional engineers who prepare the study, to the Colorado Water Conservation Board, and/or the Federal Emergency Management Agency.
  2. The base flood water surface elevations, as shown on the flood profiles and in the elevation tables, shall be the governing factor in determining accurate boundaries.
- E. Review and Amendment due to Physical Change**
1. In the event that significant changes occur or are proposed within the FO district, such as flood control measures, channelization, stream improvements or any other alteration or change in the watercourse, there shall be an evaluation of the boundaries of the floodplain as follows:
    - a. The County Engineer, in conjunction with the Colorado Water Conservation Board and the Federal Emergency Management Agency, will study the magnitude of the apparent change and determine whether there is need for a full scale study of the boundaries with a view to possible revision.
    - b. Should the Planning Commission or any person or persons, as a result of such a study or for other reasons, desire to change the boundaries of any FO district, the procedure for rezoning set forth in Section 4-1100 shall be followed.
  2. In addition, proposed boundary changes of any FO district that has been approved and incorporated into the National Flood Insurance Program shall also conform with the Federal Emergency Management Agency's map revision/amendment process.
- F. Amendment Due to the Incorporation of New Studies**
1. If the Colorado Water Conservation Board officially designates and approves additional floodplain reports affecting any river or creek in the unincorporated area of Boulder County, and upon review by the Federal Emergency Management Agency, the County Engineer shall review such reports and make recommendations to the Planning Commission regarding necessary amendments or additions to the boundaries of the FO district.
  2. The procedure for such amendments is set forth in Article 16 of this Code.

## 4-403 Floodway

- A. No development, encroachment, use, or alteration in, on or over any part of the floodway shall be permitted which alone or cumulatively with other such uses would cause or result in:
1. the occupation of permanent or temporary structures;
  2. the development or use of overnight campgrounds;
  3. the storing or processing of materials that are buoyant, flammable, explosive, or otherwise potentially injurious to human, animal or plant life;
  4. solid waste disposal sites and central collection sewage treatment facilities and new or expanded individual on-site wastewater systems;
  5. the potential of solid debris (including, but not limited to garages, storage sheds, decks, fences, etc.) or waste (including, but not limited to on-site wastewater systems, etc.) being carried downstream; or
  6. an encroachment that would adversely affect the efficiency of the floodway or change the direction of flow or cause any increase in the base flood elevation.
- B. The following open uses shall be permitted within the floodway to the extent that they are not prohibited in a particular area by any underlying zoning district and only if they do not adversely affect the efficiency of the floodway, change the direction of flow or increase base flood heights:
1. agricultural uses such as general farming, grazing of livestock and horses, truck farming, sod farming and wild crop harvesting;
  2. uses accessory to residential uses, including, but not limited to lawns, open areas, gardens, driveways, and play areas;
  3. 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, airport landing strips, and storage yards for equipment or machinery easily moved or not subject to flood damage (excluding junkyards and solid waste disposal facilities);
  4. recreational uses not requiring permanent or temporary structures designed for human habitation;
  5. utility facilities such as dams, power plants, spillways, transmission lines, pipelines, water monitoring devices, water supply ditches, irrigation ditches and laterals;
  6. open mining; or
  7. road and highway structures.
- C. Any development in the floodway shall be permitted only upon application to the County Engineer and the issuance of a floodplain development permit.
- D. The provisions of this Article 4-400 may be waived for properties within a floodway that require a repair or replacement of an existing on-site wastewater system, provided the County Engineer determines that the proposed repair or replacement is consistent with Subsections 1. through 3., below.
1. 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.
  2. The proposed repair or replacement design must be protective of groundwater and appropriate for a floodway. In making this determination the County Engineer shall consider 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. What permit requirements might exist or be imposed for on-going operation and maintenance and advanced treatment; and
    - d. Whether placement in the hydraulic shadow of a legal, pre-existing structure is possible.
  3. In no event shall a proposed repair or replacement increase the overall capacity of the existing on-site wastewater system. In addition, the County Engineer may approve a raised absorption system or installation of a vault only as a last option within the floodway if this option meets the provisions of Article 4-407(B).
  4. The County Engineer may impose terms and conditions on any waiver that may be granted to ensure that the proposal meets the requirements of this Article 4-403.D.

## 4-404 Floodfringe

- A. Any use permitted by the underlying zoning regulations shall be permitted in the floodfringe, provided the use meets the floodproofing requirements of Paragraph 4-405 of this Section.
- B. Any development in the floodfringe shall be permitted only upon application to the County Engineer and the issuance of a floodplain development permit.

## 4-405 Floodproofing

- A. All insubstantial improvements where the lowest floor of the improvement is not above the flood protection elevation shall be floodproofed as follows:
  1. The improvement, including attendant and sanitary facilities, be designed so that the structure is watertight with walls substantially impermeable to the passage of water below the flood protection elevation; the structure is anchored to prevent flotation, collapse, or lateral movement of the structure; and the structure is constructed with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
  2. The improvement be certified by a Colorado Registered Professional Engineer that the floodproofing methods are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces, and other factors associated with the base flood. Such certification shall also state the specific elevation (in relation to mean sea level) to which the improvements are floodproofed.
- B. All new construction and substantial improvements shall be floodproofed as follows:
  1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure and capable of resisting the hydrostatic and hydrodynamic loads.
  2. All new construction and substantial improvements of any building or other structure shall have the lowest floor (including basements and porches) elevated to or above the flood protection elevation, provided that:
    - a. Fully enclosed areas below the lowest floor that are subject to flooding and used solely for parking of vehicles, building access, or storage of materials in an area other than a basement shall be designed to equalize the hydrostatic pressure flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:
      - (i) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided;
      - (ii) The bottom of all openings shall 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.
    - b. Accessory structures (detached garages, sheds, and barns) and agricultural structures (Including grain bins, corn cribs, and barns) may be constructed at grade and wet-floodproofed by meeting the provisions for fully enclosed areas subject to flooding and subject to the following conditions:
      - (i) The building must be used only for the parking of vehicles or storage of tools, materials and equipment;
      - (ii) Agricultural structures (including grain bins, corn cribs, and barns) must be limited in use to agricultural purposes;
      - (iii) The structure shall not be designed or used for human habitation;
      - (iv) The accessory structure must represent a maximum investment of less than 10% of the value of the principal structure on the property, or a maximum floor area of 600 square feet;
      - (v) The structure must have low flood damage potential with respect to both the structure and its contents; and
      - (vi) Permanently affixed sanitary facilities and appliances (such as furnaces, heaters, washers, dryers, etc.) are prohibited.
    - c. Accessory structures that do not have at least two rigid walls (including carports, gazebos, and picnic pavilions) may be constructed at grade and do not require floodproofing.
    - d. Other accessory structures that do not meet the above requirements may be constructed at-grade and will only be permitted by a variance to this section, provided that:
      - (i) Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters; and
      - (ii) Service facilities such as electrical and heating equipment shall be elevated or floodproofed.
  3. All new construction and substantial improvements on a property removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F) shall have the lowest floor elevated to or above the flood protection elevation that existed prior to the placement of fill.

4. All new construction and substantial improvements of any building or other structure, within areas of shallow flooding, as specifically defined by the Federal Emergency Management Agency, shall have the lowest floor (including basements, garages, carports, and porches) elevated to or above the flood protection elevation.
  - a. For shallow flooding areas, the County Engineer may reduce the elevation requirement, upon evaluation of the floodplain on and around the proposed development.
  - b. Such a reduction shall have the lowest floor elevated to one foot above the base flood elevation, or the highest established adjacent grade plus at least one additional foot above the depth of flooding number specified in feet on the Flood Insurance Rate Maps, or at least three feet above the highest established adjacent grade if no depth number is specified.
  - c. Drainage improvements within a shallow flooding area, as specifically defined by the Federal Emergency Management Agency shall be constructed to allow floodwaters to flow around the perimeter of the structure in a controlled manner, without adversely impacting adjacent properties.
5. New construction and substantial improvement of any below-grade crawlspace shall:
  - a. Have the interior grade elevation, that is below base flood elevation, no lower than two feet below the lowest adjacent grade;
  - b. 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;
  - c. Have an adequate drainage system that allows floodwaters to drain from the interior area of the crawlspace following a flood;
  - d. Meet the provisions of Sections 4-405(B)(1), Anchoring; 4-405(B)(2)(a), Openings in Enclosures Below the Lowest Floor; and 4-405(C), Other Floodproofing Requirements.
6. Unsubstantial improvements, of any building or other structure, shall either have the lowest floor of the improvement elevated to or above the flood protection elevation or shall be designed and constructed according to the requirements of Paragraph 4-405(A).
7. As built lowest floor elevations (in relation to the 1988 North American Vertical Datum, or NAV88) for all new construction, substantial improvements, other improvements, or for new manufactured home stands, shall be certified by a Colorado Registered Professional Engineer or Colorado Registered Professional Land Surveyor. Elevation Certificates shall be submitted to the Building Division Inspector and County Engineer. Failure to submit an Elevation Certificate will result in suspension of work until proper certification is provided. To ensure compliance with floodproofing requirements during and after construction, completed Elevation Certificates shall be submitted at the following times:
  - a. For slab on grade foundation, a completed Elevation Certificate or a registered surveyor's certified statement (verifying the elevation) shall be submitted when foundation forms are completed and prior to final pour of foundation.
  - b. For buildings on elevated foundations, a completed Elevation Certificate shall be submitted when the foundation is completed and prior to rough framing.
  - c. For structures to be floodproofed, a completed floodproofing certificate shall be submitted when the floodproofing measures are completed. Accepted forms include the FEMA Floodproofing Certificate for Non-Residential Structures.
  - d. For structures that have achieved finished construction, a completed Elevation Certificate shall be submitted prior to the issuance of Certificate of Occupancy.
8. The storage or processing of materials that are buoyant, flammable, explosive, or in times of flooding could be injurious to human, animal, or plant life, shall be at or above the flood protection elevation.
9. Concerning manufactured home parks, 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 as the result of a flood; 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 shall be elevated on compacted fill or on pilings so that the lowest floor of the manufactured home will be at or above the flood protection elevation. For homes placed on pilings:
    - (i) lots shall be large enough to permit steps;
    - (ii) piling foundations shall be placed in a stable soil no more than ten feet apart; and
    - (iii) reinforcements shall be provided for pilings more than six feet above the ground level.
  - b. Adequate surface drainage shall be provided.
  - c. New manufactured homes shall 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 shall be capable of carrying a force of 4800 pounds; and
- (iv) any additions to the manufactured home be similarly anchored.

10. Concerning recreational vehicles, at least one of the following provisions shall be met:

- a. The recreational vehicle shall be on the site for fewer than 180 consecutive days.
- b. The recreational vehicle shall be fully licensed and ready for highway use.
- c. The recreational vehicle shall meet the permit requirements and elevation and anchoring requirements for manufactured homes, in accordance with Section 4-405(B)(9) of this section.

C. Other Floodproofing Requirements

- 1. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage up to the flood protection elevation.
- 2. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters.
- 3. Cutoff valves or the elimination of gravity drains below flood protection elevations in new and replacement sanitation or sewerage systems shall be used to minimize or eliminate infiltration of and discharge into flood waters.
- 4. The location of new and replacement on-site waste disposal systems shall be done in such a manner to avoid impairment to or contamination from the systems during flooding.
- 5. New and replacement electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be located at or above the flood protection elevation, unless exempted from floodplain development permit requirements under Section 4-407.F.
- 6. New buildings or other structures shall 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.
- 7. For all new subdivision proposals and other developments, including proposals for manufactured home parks and subdivisions, greater than 50 lots or 5 acres, whichever is lesser, located within a designated A Zone that does not include a water surface elevation, shall include a base flood elevation as part of the proposal.

## 4-406 Responsibilities of the County Engineer

- A. The County Engineer or designee, is responsible for the administration and implementation of the requirements of this section. Such responsibilities include, but are not limited to:
  1. Review floodplain development permit applications, review and make floodway/floodfringe determinations, and issue permits if the applications are in compliance with the provisions and requirements of this Section. The requirements of this Section include the approval of all necessary local, state, or federal permits.
  2. Obtain, review, and reasonably utilize any base flood water surface elevation and floodway data available from state or federal agencies, or other reliable sources.
  3. Obtain and maintain for public inspection copies of all floodplain reports and maps, resolutions of official floodplain map amendments, and all records pertaining to floodplain developments.
    - a. These records include certified lowest floor elevations, elevation certificates of floodproofing methods and floodway encroachment, and records of all variance actions.
    - b. The County Engineer shall report variances issued on an annual basis to the Federal Emergency Management Agency.
  4. Notify adjacent communities, potentially affected property owners, and the Colorado Water Conservation Board prior to any alteration or relocation of a watercourse.
    - a. This is done through the publication of a notice of such proposed alteration or relocation once in a newspaper of general circulation in Boulder County.
    - b. The County Engineer shall also submit evidence of such notification to the Federal Emergency Management Agency.
  5. For any alteration or relocation of a watercourse, the County Engineer shall require that maintenance of the flood carrying capacity of the altered or relocated watercourse is provided.
  6. Make interpretations where needed, as to the exact location of the boundaries of the FO district where there appears to be a conflict between a mapped boundary and actual field conditions based upon an engineering study by the applicant.
  7. Review and transmit recommendations to the Board of Adjustment regarding requested variances and appeals pursuant to Section 4-409.
  8. Review floodplain reports approved by the Colorado Water Conservation Board and make recommendations to the Planning Commission and Board of County Commissioners regarding necessary amendments or additions to the FO district.

## 4-407 Floodplain Development Permit

- A. All building permit applications shall be reviewed by the Building Division to determine whether the proposed development may be within the floodplain, or is exempted from floodplain development permit requirements under Section 4-407.F. If it appears to the Building Division that any proposed development may be within the floodplain and is not exempted from floodplain development permit requirements under Section 4-407.F., then the Building Division shall refer the application to the County Engineer. The Building Division shall not issue a building permit when floodplain issues have been raised unless the County Engineer has issued a floodplain development permit or determined that no such permit is required.
- B. Applications for floodplain development permits are to be submitted to the County Engineer and shall include the following information as applicable:
1. A completed application form with all necessary information completed.
  2. a plan at a scale of 1' = 200' or larger, stamped by a engineer registered by the State of Colorado, which includes:
    - a. the site location;
    - b. a legal description of parcel;
    - c. base flood limits and water surface elevations;
    - d. floodway limits;
    - e. channel of watercourse;
    - f. existing and proposed contours or elevations at 2' intervals;
    - g. existing and proposed structures, with the lowest floor elevations (including basements and garages) of each structure;
    - h. proposed elevations to which structures will be floodproofed (if applicable);
    - i. location and elevations of existing streets, water supply, and sanitation facilities;
    - j. limits and total land area of all existing and proposed impervious surfaces, including structures; and
    - k. existing water supply ditches, irrigation ditches and laterals.
  3. A typical valley cross-section showing:
    - a. the channel of the watercourse;
    - b. limits of floodplain adjoining each side of channel;
    - c. cross-section area to be occupied by the proposed development;
    - d. existing and proposed base flood water surface elevations;
  4. Specifications for construction and materials of buildings, floodproofing, filling, dredging, grading, channel improvements, storage of materials, water supply, and sanitation facilities as applicable;
  5. Description of the extent to which any water course will be altered or relocated as a result of the proposed development;
  6. For development proposed within a floodway the following information is required:
    - a. A title report prepared by a licensed title insurance or abstract company containing the legal description of the subject property and identifying, listing and certifying the following:
      - (i) a listing of all owners of record of the subject property;
      - (ii) all owners and their addresses of real property adjacent to the subject property; and
      - (iii) all owners of any surface, subsurface, or above surface estates, rights, or interests in the land adjacent to the subject property (including easements and interests in the oil, gas, mineral or water estate) or any other real property associated therewith; the nature and description of each such estate, right, or interest; and the addresses of all owners.
  7. A floodway analysis by a Colorado Registered Professional Engineer using methodology acceptable to the Federal Emergency Management Agency and according to the following guidelines:
    - a. If a detailed hydraulic floodway analysis has not been performed, the responsibility for determining the floodway boundary rests with the floodplain development permit applicant. The need for a detailed hydraulic floodway analysis shall be the decision of the County Engineer.
    - b. The detailed hydraulic floodway analysis shall be based on the identical hydraulic model which was used to develop the engineering study currently adopted by the Board of County Commissioners. The applicant should obtain, through the County Engineer, a copy of the input data and card deck representing the HEC-2 computer model used for their effective flood hazard study.

- c. The model must then be updated to existing hydraulic conditions to determine what surcharge levels have already been achieved by encroachments since the floodplain was established.
    - (i) Alternate floodway configurations may then be analyzed based on acceptable Encroachment Methods as outlined in the current 'U.S. Army Corps of Engineers HEC-2 Water Surface Profiles Users Manual' and submitted to the County Engineer for review and approval.
    - (ii) Approval will be based on demonstration that the cumulative effects of the proposed encroachment, plus the effects of encroachments since the original flood hazard area was established, does not cause more than a one foot rise in the established base flood water surface elevation.
    - (iii) At the County Engineer's discretion, where a regulatory floodway has been designated, it may not be necessary to determine the cumulative effects of existing encroachments.
  - d. Floodway boundary configurations will be examined and approved by the County Engineer. The following specific information, for the stream reach 1000 feet upstream and 1000 feet downstream from the proposed encroachment, must be submitted:
    - (i) A copy of the printout for the hydraulic computer model representing the unencroached base flood profile run for conditions existing at the time the currently effective floodplain was developed. The printout must include the full input and output listing.
    - (ii) A copy of the printout from the hydraulic computer model representing the floodway run for the proposed floodway configuration and including encroachments and other hydraulic changes within the floodplain since the currently effective floodplain was established. The printout must include the full input and output listing with all input changes from the original model highlighted.
    - (iii) A copy of the floodway data table representing data for the proposed floodway configuration.
    - (iv) A copy of the currently effective official engineering study showing the existing floodplain and the proposed floodway configuration.
    - (v) Certification from a Colorado Registered Professional Engineer that the proposed floodway configuration, in combination with current floodplain hydraulic conditions, meets established requirements when evaluated against flood elevations established for unencroached conditions when the original floodplain study was completed.
8. An engineering report addressing those standards set forth in Paragraph 4-407(B) of this Section.
- C. Standards for Permit Review
1. In reviewing an application for a floodplain development permit, the County Engineer shall determine the specific flood hazard at the site and shall evaluate the suitability of the proposed use in relation to the flood hazard.
  2. In addition, the County Engineer shall consider the following factors in reviewing permit applications:
    - a. the effect of the proposal upon the efficiency or capacity of the floodway;
    - b. the effect on lands upstream, downstream and in the immediate vicinity of the development including the potential danger to persons;
    - c. the effect of the proposal on the flood profile and flood heights;
    - d. the effect of the proposal on any tributaries to the main stream, drainage ditches, water supply and irrigation ditches, or any other drainage or irrigation facilities or systems;
    - e. 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;
    - f. whether the applicant would obtain an undue advantage compared to later applicants who might request a permit;
    - g. if the proposed use is for human occupancy;
    - h. the probability that materials may be swept onto other lands or downstream to the injury of others;
    - i. the susceptibility of the proposed facility and its contents to flood damage;
    - j. the safety of access to the property in times of flood for ordinary and emergency vehicles;
    - k. whether any proposed changes in a watercourse will have an environmental effect on the watercourse, including streambanks and streamside trees and vegetation;
    - l. the relationship of the proposed development to the Boulder County Comprehensive Plan and any applicable floodplain management programs;
    - m. whether the cumulative effect of the proposed development with other existing and anticipated uses will increase flood heights more than one foot; and
    - n. if the expected heights and velocities of the floodwaters expected at the site will adversely affect the development of surrounding property.

3. If the County Engineer determines that the application for floodplain development permit meets the purposes and requirements of this Section, the floodplain development permit shall be issued, with the attachment of any conditions as deemed necessary to further the purposes of this Section. Such conditions may include, but are not limited to, specifications for modification of waste disposal methods and facilities, landscaping, periods of operation, operational controls, sureties, deed restriction, and adequate floodproofing.

**D. Board of Commissioners Review**

1. In the event that the County Engineer determines that a floodplain development permit application for any development in the floodway meets the applicable standards for approval, the permit will not be effective until 14 days after the date of permit issuance.
  - a. At the time of permit approval, the County Engineer shall do the following:
    - (i) within seven days, publish a public notice of the proposed use and the permit issuance in a newspaper of general circulation in Boulder County;
    - (ii) shall transmit a copy of the notice to property owners adjacent to the property in question; and
    - (iii) forward to the Board of County Commissioners a written statement which shall include (1) the location and a description of the proposed use under the permit; (2) the reasons for approval of the permit; and (3) any conditions the County Engineer placed on the issuance of the permit.
  - b. Upon receiving the Director's statement, and before the effective date of the permit, the Board may call the permit up for review at a public hearing.
    - (i) This hearing shall constitute a revocation of the permit.
    - (ii) At the public hearing, the Board shall consider evidence related to the permit which may be presented by the County Engineer, the applicant, or interested members of the public.
    - (iii) The Board shall determine whether the application meets the requirements of this article, and if it so finds, shall issue the permit, with such conditions as the deemed appropriate.
2. During a declared local disaster emergency, for development in the floodway:
  - a. At the time of floodplain development permit application submittal, the County Engineer shall transmit a notice of the proposed use to, at a minimum, property owners adjacent to the property in question.
  - b. The permit will be effective on the date of permit issuance.
3. The County Engineer may waive any or all requirements listed in 4.407.D.1. and 4.407.D.2 for the following floodway development:
  - a. Emergency activities required for the immediate protection of life, safety, or property, or to restore essential public services,
  - b. Minor disaster recovery repair work that does not cause a rise in predicted 100-year water surface elevation as determined by a licensed engineer, and
  - c. Any development activities that take place entirely inside an existing building.

**E. Permit Expiration, Certification Enforcement**

1. The County Building Official shall not issue any building permit for, nor shall the Director issue any use permit involving any building, structure, or other development within the FO district unless a floodplain development permit has been granted for the development.
2. A floodplain development permit shall expire two years after the date of issuance if the permittee has not commenced construction under the permit.
3. Whenever the County Engineer has personal knowledge of any violation of the provisions of this section, written notice shall be given to the violator to correct such violation within thirty days after the date of such notice.
  - a. Should the violator fail to correct the violation within this 30 day period, the County Engineer may request that the sheriff of the County issue a summons and complaint to the violator, stating the nature of the violation with sufficient particularity to give notice of said charge to the violator.
  - b. The summons and complaint shall require that the violator appear in County Court at a definite time and place stated therein to answer and defend the charge.

- F. Minor Building Permits Exempted from Floodplain Development Permit Requirements**
1. The following types of building permits will not require a floodplain development permit unless they (alone, or in conjunction with a larger project of which they are an actual or logical part) increase the structure's floor area or footprint, cause a floodplain encroachment, under Section 18-159, or constitute a substantial improvement under Section 18-206:
    - 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. Re-roofs;
    - f. Re-siding;
    - g. Insulation or simple weatherization or energy efficiency upgrades;
    - h. Roof-mounted or existing structure-mounted solar collectors;
    - i. Window and door replacements;
    - j. Renovation or remodel projects that cost less than \$750.
  2. The cost of any such exempted work shall not be included in the cumulative calculation required under Article 18-206 (definition of substantial improvement), unless part of a substantial damage calculation or estimate.

## 4-408 Nonconforming Structures and Uses

- A. Existing Structures and Uses**
1. The use of any structure on land 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 following conditions:
    - a. No such building structure may be expanded, improved, repaired, restored, or replaced unless the work complies with the floodproofing provisions of Section 4-405 of this Article.
      - (i) If the work does not constitute a substantial improvement, then only the constructed or reconstructed portion shall have to comply with Section 4-405 of this Article.
      - (ii) If the work qualifies as a substantial improvement, then the entire structure shall be protected as required in Section 4-405.
    - b. A change in the use of a building or structure, as defined in Article 18-206, will require that the entire building or structure to be protected pursuant to Section 4-405, unless a waiver is granted by the County Engineer. Floodproofing requirements may be waived for a change in use if the County Engineer determines there is no potential for any significant conflict with this Article 4-400 and the following circumstances are met:
      - (i) The existing structure is located outside of the floodway;
      - (ii) The existing structure is determined to be structurally sound by an engineer licensed in the state of Colorado;
      - (iii) The cost of compliance to this Article 4-400 is less than 50% of the current value of the structure; and
      - (iv) The proposed change in use is to a use that reduces, minimizes, or otherwise creates a less intensive use or decreases human occupation.
  2. No person shall store or process materials that are buoyant, flammable, hazardous, toxic or explosive, or that in times of flooding could be harmful to human, animal, or plant life except at or above the flood protection elevation.
- B. If a conflict arises between the requirements of this Section and the provisions of Section 4-1000, Nonconforming Structures and Uses, the requirements of this Section shall control.**

## 4-409 Appeals and Variances

- A. Appeals to the Board of Adjustment may be taken by any person aggrieved by his inability to obtain a floodplain development permit or by the decision of the County Engineer based upon or made in the course of the administration or enforcement of the provisions of this Section**
1. The Board of Adjustment shall hear and decide appeals and requests for variances from the requirements of this Section 4-400.
  2. The Board of Adjustment shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the County Engineer in the enforcement or administration of this Section 4-400.

3. The procedures and requirements for the filing of appeals and variance requests are set forth in Section 2-800 ("Boulder County Board of Adjustment"), the pertinent provisions of Article 3 ("Processes"), and Section 4-1200 ("Board of Adjustment") of this Code, in addition to this Section 4-409.
  4. In passing upon such applications, the Board of Adjustment shall consider all technical evaluations, all relevant factors and standards specified in other applicable sections of this Code, and:
    - a. the danger that materials may be swept onto other lands to the injury of others;
    - b. the danger to life and property due to flooding or erosion damage;
    - c. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners;
    - d. the importance of the services provided by the proposed facility to the community;
    - e. the necessity to the facility of a waterfront location, where applicable;
    - f. the availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;
    - g. the compatibility of the proposed use with the existing and anticipated development;
    - h. the relationship of the proposed use to the Comprehensive Plan, any adopted intergovernmental agreement affecting land use, and any floodplain management program for the subject area;
    - i. the safety of access to the property in times of flood for ordinary and emergency vehicles;
    - j. 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; and,
    - k. 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.
  5. Upon consideration of the factors of Subsection 4-409(A)(4) and the purposes of this Section 4-400, the Board of Adjustment may attach such conditions to the granting of variances as it deems necessary to further the purposes of this Section 4-400.
  6. The County Engineer shall maintain the records of all appeal actions, including technical information, and report any variances to the Federal Emergency Management Agency.
- B. Conditions for Variances**
1. Generally, variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (i-xi) in Paragraph 4-409(A)(4) have been fully considered. As the lot size increases beyond the one-half acre, the technical justifications required for issuing the variance increases.
  2. Variances may be issued for the repair or rehabilitation of designated historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
  3. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
  4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
  5. Variances shall only be issued upon:
    - a. a showing of good and sufficient cause;
    - b. a determination that failure to grant the variance would result in exceptional hardship to the applicant; and
    - c. a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expenses, create nuisances, cause fraud on or victimization of the public as identified in Paragraph 4-409(A)(4) or conflict with existing local laws or ordinances.
  6. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk from the reduced lowest floor elevation.

# Exhibit B

Final September 1, 2016 proposed revised floodplain regulations in Articles 4-400, definitions in Article 18, and Site Plan Review regulations in Article 4-800. No redline.

**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 provisions and regulations of this section must apply to all lands within the unincorporated area of Boulder County which are located within the Floodplain Overlay (“FO”) District. If a lot or other parcel of land lies partly within the FO District, the part of such lot or parcel lying within the district must meet all requirements for such district as set forth in this Code. If a building or structure lies partly within the FO District, then these requirements must apply 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 intended to be 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. 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 any or all damages from flooding. Nor must this Article 4-400 create a liability on the part of, or a cause of action against, Boulder County or any officer or employee thereof for any flood damages that may result from reliance on this article or any administrative decision.

**D. More Restrictive Prevails.**

- a. The Federal Emergency Management Agency (“FEMA”) and the Colorado Water Conservation Board (“CWCB”) have established certain minimum standards for regulatory floodplains. These minimum standards are incorporated herein by this reference. To the extent a FEMA or CWCB requirement conflicts with a provision in 4-400, the most restrictive controls.
- b. Similarly, these floodplain regulations are not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. Where these regulations and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more restrictive restrictions must prevail.

**E. Permits Required.**

1. All development in the FO District requires the issuance of an Individual FDP or must be covered by the General FDP. Conducting work in the FO District that is not covered by a General FDP or without an Individual FDP may result in enforcement action under Article 17.
2. In addition to the Floodplain Development Permits required by this section, anyone conducting work in the FO District is responsible for obtaining all other required local, state, and federal permits prior to project construction.

**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 must note that on any planning approval issued.
2. All building permit applications must 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 must refer the application to the County Engineer. The Chief Building Official must not issue a building permit when floodplain issues have been raised unless the County Engineer has confirmed the development is approved under the General FDP, has issued an Individual FDP, or has determined that neither type of floodplain permit is required.
3. All OWTS applications must 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 they 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, and in particular those portions of the DFIRM and FIS that define the 100-year floodplain, which are in effect on the date of a property owner’s complete application for any permit or process in this Code establishes 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. In order to ensure that Boulder County floodplain regulations reflect the best data available to Boulder County, the County Engineer may recommend that the Planning Commission recommend to the Board of County Commissioners adoption of a “Boulder County Floodplain” to augment the FEMA Floodplain. The Boulder County Floodplain must be comprised of the same flood risk zone designations as the FEMA Floodplain. The purpose of adopting a Boulder County Floodplain is to facilitate use of best available data not adopted by FEMA to establish floodplain boundaries, Base Flood Elevations (“BFE”), and Flood Protection Elevations (“FPE”) to better protect residents of Boulder County from flood hazards. In no instance may the Boulder County Floodplain take out of the FO District an area or property designated as within the FO District by the FEMA Floodplain.
3. The following reports designate the location and boundaries of the Boulder County Floodplain. The maps in these reports 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 hereby incorporated by reference into this Code.
  - a. Floodplain Re-analysis and Floodway Delineation, North St. Vrain and St. Vrain Creeks, Boulder County, CO, by Love & Associates, Inc., October, 1992; and
  - b. Any area defined as floodway in the definition of Floodway in Section 4-414.

4. All records pertaining to floodplain development must be on file 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 must maintain digital maps delineating the location and boundaries of the FEMA Floodplain and the Boulder County Floodplain. The FEMA Floodplain map must depict in plan view the horizontal boundary of the flood hazards described in the underlying flood studies, as published effective by FEMA. The Boulder County Floodplain map must 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 must 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 must maintain records of superseded versions of the Official Map for historical reference.

### **C. Interpretation of Official Maps**

1. Where interpretation is needed as to which uses, parcels, structures, or other facilities are located in or out of the FO District, including in situations where there appears to be a conflict between a mapped boundary and actual field conditions, the County Engineer must make the necessary interpretation by referring, as necessary, to the best available data at that time. Sources of best available data include without limitation 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 which the County Engineer finds meets an acceptable level of technical accuracy as determined through prevailing industry practices.
2. The use of aerial photography to interpret FO District boundaries, but without the consideration of local terrain data, must be for informational purposes only, and not for making determinations as to the exact location of the boundaries of the FO District.

3. If the County Engineer makes an interpretation as to 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.

#### **D. Amendment of Official Map**

1. The FEMA Floodplain within the FO District will be deemed automatically 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 whatsoever 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 because such approval was previously granted during hearings on amending the Boulder County Floodplain.

(ii) Alternatively, 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. Unless otherwise provided in this Section 4-403(D) (for example, an automatically adopted DFIRM update), a change in the boundary of the FO District which results in a portion or all of a parcel being added to or removed from the FO District requires review and approval of a Zoning Map Amendment by the Planning Commission and the Board of County Commissioners per the provisions of Section 4-1100. Upon approval of changes to the Official Map by the Planning Commission and the Board of County Commissioners, the County Engineer must revise the Official Map accordingly.

3. If a property owner in the FO District feels that the provisions of this Section should not apply to some or all of their 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. Evidence of LOMA approval must be provided to the County Engineer.
4. An interpretation by the County Engineer 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 result in an amendment to the Official Map that requires review and approval by the Planning Commission and Board of County Commissioners.
  - a. If the Board of Adjustment overturns a determination of the County Engineer after hearing an appeal, the County Engineer is authorized to make any necessary modifications to the Official Map or its underlying supporting documentation without need for further approval by the Planning Commission or the Board of County Commissioners to get a Zoning Map Amendment approved, regardless of how many parcels are affected; provided, however, that 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.
5. Clerical errors in the Official Map may be corrected by the County Engineer as they are discovered from time to time, without need for approval by the Planning Commission or the Board of County Commissioners, regardless of how many parcels are affected.
6. From time to time, 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 must 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.
7. 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 are required to submit technical data to FEMA in the form of a map revision request within six months of the date of completion of a project where

changes (either increases or decreases) in the 100-year water surface elevation greater than 0.3 foot result

8. 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 must first 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, which requires applicants to demonstrate that development projects, 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 for projects in the Floodway and greater than 0.50 foot for projects in the Flood Fringe.
- B. **Uses Prohibited in Floodway.** Under no circumstance may the County Engineer issue a Floodplain Development Permit for the following activities and uses, which are prohibited within all mapped Floodways:
  1. Construction of new Permanent buildings (either residential or non-residential);
  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 which 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(H)(4);
  11. Fences composed of solid wood or chain link, or any other fence that does not meet the Boulder County standards for fence installation;

12. Any activity or use that would create the potential for solid debris (including, but not limited to decks and fences) or waste, including rubbish as defined by Article 14, to be carried downstream;
13. New or expanded Critical Facilities below 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 4-404.2(D).

**C. Uses Allowed in Floodway under Certain Conditions.** Unless prohibited in a particular area by any underlying zoning district, and only if they do not adversely affect the efficiency of the Floodway, change the direction of flow, increase base flood heights without a FEMA-approved Conditional Letter of Map Revision (“CLOMR”), or pose a significant safety hazard, the County Engineer may issue Floodplain Development Permits for the following development types and open uses within the Floodway:

1. 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);
2. Uses accessory to residential uses, including, but not limited to lawns, open areas, gardens, driveways, and play areas;
3. 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;
4. Recreational uses not requiring Permanent or temporary buildings designed as habitable space, unless a special event permit has been issued for a temporary building;
5. Utility facilities such as dams, power plants, spillways, transmission lines, pipelines, water monitoring devices, water supply ditches, irrigation ditches and laterals; and open mining;
6. Construction or installation of hydraulic structures such as bridges, culverts, weirs, diversions, drop structures, and fish ladders, for access and flood or stormwater control; and
7. Certain Critical Facilities above 6,000 feet in elevation, as discussed in 4-405(E).

**D. Uses Allowed in Flood Fringe under Certain Conditions.** Any use permitted by the underlying zoning regulations must 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 Onsite Wastewater Treatment Systems (OWTS), when allowed, must conform to the requirements of 4-405(H).

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.** In order to avoid undue hardship to property owners within Boulder County, yet remain in compliance with FEMA regulations regarding Floodplain permitting, the County Engineer is hereby authorized to create a General FDP, updated periodically, in accordance with the provisions of this Section 4-404.1. The intent of the General FDP is to allow certain limited uses and activities in the Floodplain without the need to apply for and gain approval of an Individual FDP, because the nature and extent of these uses and activities will likely not increase BFEs or have an adverse effect on neighboring properties, species, or ecosystems.

### B. Notification Process.

1. Notification of the County Engineer is required for certain types of projects covered by the General FDP (listed in 4-404.1(C) below) in order for the County Engineer to consider individual and cumulative impacts, ensure minimum compliance with federal and state floodplain rules, and confirm that the work conforms with the intent of the General FDP. For those projects where the County Engineer receives notice as a referral required by a separate Land Use Code review process (such as Site Plan Review or Special Use Review), duplicative notification of the County Engineer is not required. For all other projects that require notification, the applicant must submit the following information to the County Engineer a minimum of 30 days prior to commencing work:

- a. Project Description, including materials description and a discussion on the expected impact to the channel and floodplain;
- b. Location Description (an accompanying location map is best); and
- c. Site Plan, if necessary to further describe the work.

2. If the work is consistent with the intent of the General FDP, the County Engineer will respond to the owner with this confirmation. 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.

C. **Uses and Activities Eligible for a General FDP.** The County Engineer may in his professional judgment determine that the following activities will not result in increases to BFEs or have an adverse effect on neighboring properties, species, or ecosystems and, consequently, that such projects are deemed approved under a General FDP. Under the General FDP, for certain projects described below, owners must notify the County Engineer in accordance with the procedures in 4-404.1(B) above.

1. Activities that require notification 30 days prior to commencement:

- a. Road and trail widening, surface type changes, and overlays of greater than six inches (if fill is necessary for widening, an Individual FDP is required);
- b. New parking lots greater than 0.1-acre;

- c. New underground utilities that do not permanently alter topography and are :
  - (i) Greater than 250 feet in length and installed perpendicular to flood flows; or
  - (ii) Installed under a perennial stream channel.
- d. Temporary in-stream diversions or dewatering (limited to temporary construction diversions and temporary diversions to maintain an adjudicated water right; under the General FDP, the dewatered reach must not exceed 300 feet, and may require additional permitting through the Colorado Department of Public Health and Environment);
- e. In-Kind Replacement of storm drainage system or infrastructure components including but not limited to hydraulic structures such as culverts and check dams. An individual FDP is required for all replacement bridges. An individual FDP may also be required if: physical conditions of the channel have changed to the extent that in-kind replacement is not possible and/or Boulder County suggests replacement with a different design and/or size or new component;
- f. Private storm drainage infrastructure repairs and Maintenance
- g. Fences not in the Floodway;

2. Activities that do not require notification:

- a. Road, trail, parking area, and driveway patching, sealing, milling, dirt/gravel leveling, and repair of drainage-related damage to match adjacent grade (these activities must not increase grade by 6 inches or more);
- b. New driveways, trails, sidewalks, roads and streets constructed completely at or below-grade;
- c. Public drainage system and infrastructure repairs and Maintenance, including normal or regularly-scheduled maintenance to restore function and/or usability, not to exceed the previously-existing design. Sediment removal associated with this work is limited to culverts, bridges, and ditch headgates to restore normal function, limited to within the channel 300 feet upstream and downstream of these hydraulic structures. In all cases, repairs and Maintenance performed under the General FDP must not lower the normal channel invert elevation.
- d. Replacement guardrails that are no taller than the previous guardrails, and that do not decrease the available open area for the passage of floodwaters; (new guardrails or replacement guardrails that do not meet the above criteria require an Individual FDP);
- e. Flood-deposited sediment removal in the overbanks and floodplain areas, limited to 6 inches or less (greater than 6 inches requires Individual FDP)

- f. Debris removal limited to large, woody, unanchored or dead vegetation and rubbish as defined in Article 14;
- g. Routine maintenance of utility and ditch easements and ROWs;
- h. New overhead utilities, including supporting structures, as well as maintenance of overhead utilities;
- i. New underground utilities that do not permanently alter topography and are:
  - (i) Less than 250 feet in length; and
  - (ii) Installed parallel to flood flows
- j. Repair and Maintenance of underground utilities (work must not permanently alter topography);
- k. Installation of sign or mailbox posts, telephone poles, or similar elements, unless more than 5 such elements are located along a line of the same bearing that are not parallel to flow and could create an obstruction;
- l. Repair or replacement of existing piers or posts supporting a conforming deck;
- m. Activities associated with construction stormwater BMPs, including but not limited to temporary erosion control measures, etc.;
- n. General farming, pasture, horticultural activities, and forestry that do not involve earthwork that permanently alters the topography or any clearing/grubbing of an area greater than 0.1 acres;
- o. Temporary buildings or structures associated with general farming, pasture, horticulture, and forestry activities that do not exceed 120 square feet (200 square feet for loafing sheds) and are outside of the Floodway;
- p. Repairs necessary to correct existing violations of Boulder County health and safety codes or to ensure safe and healthy living conditions, such as:
  - (i) Electrical repairs;
  - (ii) Furnace repairs or replacements;
  - (iii) Water heaters, boilers, and evaporative cooler repairs or replacements;
  - (iv) Air conditioner repairs or replacements;
  - (v) Repairs or replacements to roof coverings; and
  - (vi) Insulation or simple weatherization or energy efficiency upgrades;
- q. Gardening and landscaping including planting vegetation, mulching, and raised beds less than 12 cubic yards total (but not hardscaping such as retaining walls, terraces, etc.); and
- r. Lawns and lawn maintenance activities.

- 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.**
1. Any development within the floodplain that does not meet the criteria of a General FDP requires an Individual FDP prior to beginning the work or a determination by the County Engineer that no type of FDP is required at all.
  2. 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.
  3. Anyone considering a project in the Floodplain that varies from those projects described above 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. Updates to General FDP.** To reflect changes to federal, state, or local regulations or guidance or for other good cause, from time to time the County Engineer may propose updates to the terms and conditions of the General FDP. A copy of the approved General FDP, 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, Flood Protection Measures. 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 construction and 4-413 for improvements to existing nonconforming 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. existing and proposed contours or elevations at 2' intervals;
    - vi. existing buildings

- vii. location and elevations of existing streets, water supply, and sanitation facilities, if applicable;
  - viii. limits and total land area of all existing and proposed impervious surfaces, including buildings; and
  - ix. 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 Onsite Wastewater Treatment Systems, a Site Plan that includes items 4-404.2(B)(3)(a)(1-7) 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(H).
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(D) and (E) below.
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(D) and 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 must 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 must 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.

2. **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.

**D. Encroachments Prohibited; Exceptions.** Encroachments within the adopted FEMA Floodway, other than those listed in 4-404(C), are prohibited, unless it has been 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).

1. 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.
2. 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 CLOMR from the County Engineer.
3. 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 CLOMR from the County Engineer.
4. 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.
5. 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-\_\_ must be followed.
6. In all instances, no increases in water surface elevation will be allowed that impact an insurable building.
7. Following project completion, FEMA Floodway encroachments that result in water surface elevation changes greater than those allowed under 4-404(C) must apply for a map revision from FEMA. See 44 C.F.R. Part 65.

**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 4-404.2(D)(1) above must apply.

## 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. No person may store or process materials that are buoyant, flammable, hazardous, toxic or explosive, or that in times of flooding could be harmful to human, animal, or plant life except at or above the FPE, unless the materials are stored in accordance with 4-405(I) governing storage tanks.

3. All construction (including new construction as well as improvements below the FPE) must be built with materials and utility equipment resistant to flood damage up to the FPE.
4. All new and replacement water supply systems must be designed to minimize or eliminate infiltration of flood waters into the system.
5. 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.
6. 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 Construction**

### **1. General Requirements**

- a. All New Construction must be built using methods and practices that minimize flood damage.
- b. New Construction in the Floodway is prohibited.
- c. New Basements in the Flood Fringe are prohibited.
- d. All New 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 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 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.
- i. 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 4-404(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-(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 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-(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. Crawlspace.** New 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).

**D. Existing Buildings**

1. See 4-413 for requirements applicable to nonconforming structures and buildings.

**E. 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 (in accordance with 4-413(B)) 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.

**F. 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.

#### **G. 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 4-404(F) of this section.

#### **H. 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 On-site Wastewater Treatment Systems (OWTSs) 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.
    - (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:

<b><math>F_b = 0.134V_t\gamma FS</math></b>		
<i>Where:</i>	<b><math>F_b</math></b>	is the buoyancy force exerted on the tank, in pounds.
	<b><math>V_t</math></b>	is the volume of the tank in gallons.
	<b>0.134</b>	is a factor to convert gallons to cubic feet.
	<b><math>\gamma</math></b>	is the specific weight of flood water surrounding the tank (generally 62.4 lb/ft <sup>3</sup> for fresh water and 64.1 lb/ft <sup>3</sup> for salt water.)
	<b>FS</b>	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(H)(2) and 4-405(H)(3).
- b. 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(C), Nonconforming Uses.

**I. 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(H)(3)(b) 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.

**J. 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.

**K. Elevation Certificate Requirements**

1. As built Lowest Floor Elevations (referenced to the NAVD88 datum) for all New 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, please 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(C)(2).
- 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.

## 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.** 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).
- 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.
3. Variances may be issued for new 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, so long as the criteria in section 4-409(E) above are met and subject to the following:
- a. As the lot size increases beyond the one-half acre, the technical justifications required for issuing the variance increases.
  - b. This type of variance may not be issued within any designated Floodway
  - c. 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.

- 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.**

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. 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 the flood protection measures described in this section 4-413(B) below.
3. A nonconforming building or structure (whether residential or non-residential) in the Floodway may be improved, repaired, restored, or replaced so long as it meets the following criteria:
  - a. No such structure may be expanded by addition of square footage, footprint, or Habitable Space.
  - b. Substantial Improvements or repair of Substantial Damage to buildings in the Floodway must conform with the requirements of 4-405 for New Construction.
  - c. If the work to improve, repair, restore, or replace 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.
4. Flood Protection Measures.
  - a. All existing nonconforming insurable buildings are subject to the tracking of major repairs, remodeling, additions, and other improvements to determine when such work would constitute a Substantial Improvement as defined by FEMA. 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.
  - b. In Boulder County, compliance with the flood protection measures of this code in the manner that is required for New Construction is required when

the cumulative percentages for the improvement cost to market value ratio exceeds 50%, as demonstrated by the following equation:

$$\frac{\text{Cost of Improvement(s)/repair of damage since 9/11/2013}}{\text{Current market value of building at time of each project or prior to incurring damages}} > 50\%$$

- (i) Improvement percentages are tracked cumulatively starting September 11, 2013.
  - (ii) Market values should be provided by the applicant in the form of a recent appraisal of the building or any other method approved by FEMA and explained within FEMA P-758. In the absence of a market value submitted by the applicant, the County Engineer will use the data available from the County Assessor to make a valuation.
  - (iii) 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.
- c. Results of the calculations will be handled as follows:
- (i) If it is determined that the work is necessary to repair Substantial Damage, or the improvement(s) constitute a Substantial Improvement, and the building is not located in the Floodway, then the entire building must be brought into compliance with 4-405.
  - (ii) For Substantial Improvements or repair of Substantial Damage in the Floodway, the requirements of 4-413(B)(6) must apply.
- d. If a conforming building is affected by an amendment to the Official Map or this Article that results in a higher BFE, and the building becomes nonconforming as a result of the BFE change, then any subsequent permits for the nonconforming building must be checked for Substantial Improvements, and must be regulated based on the higher BFE.
- e. Repairs Exempted from Substantial Improvement Calculations.
- 1. Costs associated with the following types of repairs to buildings and service equipment/systems will not be included in a Substantial Improvement calculation, as they are deemed the minimum necessary to correct existing violations of Boulder County health and safety codes or are necessary to maintain a safe and healthy living environment:
    - 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;
- 2. 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) will be exempt from Substantial Improvement calculations, but still require an Individual FDP.
- 3. Substantial Damage determinations that may have included damages to the items identified in 4-413(B)(4)(e) above, or other similar items, will not be updated to subtract the costs associated with repairs necessary to correct existing violations of Boulder County health and safety codes.
- 5. Improvements determined by the County Engineer to not be Substantial Improvements must still meet all other applicable requirements of this Article.
- 6. Flood Protection Retrofitting Measures for Existing buildings in the Floodway
  - a. Retrofitting existing buildings in the Floodway involves techniques that protect the building from not only flood inundation, but also the potential for scour and erosion, debris impact, and other potential hazards associated with Floodways.
  - b. Any nonconforming building or structure in the Floodway may be relocated, provided that the change in location reduces the potential risks associated with future flood events or other known natural hazard areas or incidents (such as by moving the building or structure out of the mapped Floodway or floodplain or otherwise to a less hazardous location on the property). Relocation is subject to other provisions of this Code, including but not limited to setback and zoning requirements.
  - c. If sufficient area is available on the subject property, all buildings that have incurred Substantial Damage must be relocated outside of the Floodway, or to a less hazardous area on the property as determined by the County Engineer, unless the applicant can demonstrate why such relocation is not feasible.
  - d. When a flood protection retrofit for a residential building in the Floodway is required due to a change in use or as a result of a Substantial Improvement determination, the County Engineer must determine which of the following measures must be implemented:
    - (i) Relocation/Removal

- a. For all buildings or structures other than primary residences, the applicant must first demonstrate why relocation entirely outside the Floodway is not practicable.
  - b. 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.
- (ii) Elevation using Posts, Columns, or Piles
- a. This technique requires that the posts or columns be placed in drilled or excavated holes, or that piles be driven into the ground.
  - b. Posts or columns must be encased in concrete and include a footer.
  - c. Posts, columns, and piles must be sufficiently anchored to resist the expected hydrodynamic and hydrostatic flood forces.
  - d. Access may be allowed to extend below the FPE.
- (iii) Elevation using stem walls parallel to the direction of flow
- a. This technique must allow for water to flow freely at high velocities between stem walls.
  - b. Footers must be designed and installed to account for potential scour associated with flooding.
- (iv) Other techniques proposed by the applicant may be approved by the County Engineer on a case-by-case basis, so long as they address the hazards typical of Floodways, as outlined in the definition of Floodway in Section 4-414.
- (v) In all cases, the bottom of lowest horizontal structural member (floor joists), as well as all service equipment, must be above the FPE.
- (vi) In all cases, a continuous load path from the retrofitted foundation to the elevated portion of the home is required.
- (vii) For non-residential buildings, the applicant must first consider the retrofit requirements for residential buildings in this Section 4-413(B)(6), but at a minimum, the requirements of 4-405(C)(3) must apply.
- d. 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(K), 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).

**C. 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 flood protection requirements may be modified or waived for a change in use if the County Engineer determines based on good and sufficient cause shown by the applicant that there is no potential for any significant conflict with this Article 4-400 and all of the following circumstances 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 cost of compliance with this Article 4-400 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; and
  - e. The proposed change in use is to a use that reduces, minimizes, or otherwise creates a less intensive use or decreases human occupation.

## 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, whereas 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, whereas 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.** See CWCB definition.

**Effective Date.** See FEMA definition.

**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.

FEMA defines the Floodway as the channel of a river or other watercourse and adjacent land areas that must be kept free of development and other encroachments in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

The Colorado statewide standard for the designated height to be used for all newly studied reaches must be one-half foot (six inches). Letters of Map Revision to existing Floodway delineations may continue to use the Floodway criteria in place at the time of the existing Floodway delineation.

In the foothill canyons and in any drainage above 6,000 feet (NAVD88) in elevation, based on best terrain data available during the last FO District update, and as a result of the

expected high flow velocities, the Floodway comprises the entirety of the 1%-annual-chance (100-year) flood hazard area, except where an engineering study has demonstrated that a distinction between Floodway and Flood Fringe should exist.

In Zone A or AE areas, in the absence of a specific floodway designation by FEMA or Boulder County and where the proposed development does not involve buildings or structures (but may include without limitation OWTS and LPG tanks) the Floodway will be defined as:

1. The channel or flowpath of the river, stream, or other watercourse and areas of the floodplain where the product number of flood depth (in feet) multiplied by flood velocity (in feet per second) is greater than 4, based on the 1987 Colorado State University flume study. Flow depth and velocity can be determined from a number of sources, including, but not limited to hydraulic modeling, water surface elevation information, terrain data, and flood risk products created specifically to display depth and/or velocity; or
2. Those areas determined to be Floodway based on an engineering study.

For development involving buildings, the responsibility for determining a proposed Floodway boundary rests with the applicant. Once proposed by the applicant, it must be reviewed by Boulder County to determine if the proposed project is in the Floodway or Flood Fringe.

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.

**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.** See FEMA definition.

**Letter of Map Change, Revision, Amendment.** See FEMA definition.

**Lowest Adjacent Grade.** See FEMA definition.

**Maintenance.** Maintenance means any activity undertaken to repair or prevent the deterioration, impairment, or failure of any utility, structure, or infrastructure component, including, without limitation, the removal of sediment, debris, and vegetation, installation of erosion and sediment control devices, and the replacement of structural components, so long as the work does not expand the previously-permitted condition. 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.
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”

# Exhibit C

Final September 1, 2016 proposed revised floodplain regulations in Articles 4-400, definitions in Article 18, and Site Plan Review regulations in Article 4-800 with redline comparison to Exhibit A, existing adopted floodplain regulations.

**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 ~~human~~ 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; ~~and~~ to prevent or minimize damage to public infrastructure, facilities, and utilities; and to ~~aid the public in determining if a property is in a potential flood area~~ 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**

**Applicability.**

**~~4-401 Application and Liability~~**

- ~~1.A.~~ \_\_\_\_\_ The provisions and regulations of this section ~~shall~~must apply to all lands within the unincorporated area of Boulder County which are located within the Floodplain Overlay ~~(“FO-Zoning”)~~ District. If a ~~structure, lot, or other parcel of land lies partly within the FO district or the floodway~~ District, the part of such ~~structure, lot, or parcel lying within the district or floodway~~ shall~~must~~ meet all requirements for such district ~~or floodway~~ as set forth in this Code. If a building or structure lies partly within the FO District, then these requirements must apply 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.
- ~~2.C.~~ No Liability. The degree of flood protection intended to be 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.~~ Floods of greater magnitude may occur ~~and flood.~~ 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~~Article 4-400 does not imply that ~~the~~land areas outside of 100-year floodplain

~~area~~ boundaries or land uses permitted within such areas will be free from flooding or flood damages, or that compliance with these regulations will prevent any or all damages from flooding. Nor ~~shall~~must this ~~article~~Article 4-400 create a liability on the part of, or a cause of action against, ~~the Boulder County of Boulder~~ or any officer or employee thereof for any flood damages that may result from reliance on this article or any administrative decision.

#### D. More Restrictive Prevails.

- a. The Federal Emergency Management Agency (“FEMA”) and the Colorado Water Conservation Board (“CWCB”) have established certain minimum standards for regulatory floodplains. These minimum standards are incorporated herein by this reference. To the extent a FEMA or CWCB requirement conflicts with a provision in 4-400, the most restrictive controls.
- b. Similarly, these floodplain regulations are not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. Where these regulations and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more restrictive restrictions must prevail.

#### E. Permits Required.

1. All development in the FO District requires the issuance of an Individual FDP or must be covered by the General FDP. Conducting work in the FO District that is not covered by a General FDP or without an Individual FDP may result in enforcement action under Article 17.
2. In addition to the Floodplain Development Permits required by this section, anyone conducting work in the FO District is responsible for obtaining all other required local, state, and federal permits prior to project construction.

#### 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 must note that on any planning approval issued.
2. All building permit applications must 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 must refer the application to the County Engineer. The Chief Building Official must not issue a building permit when floodplain issues have been raised unless the County Engineer has confirmed the development is approved under the General FDP, has issued an Individual FDP, or has determined that neither type of floodplain permit is required.

3. All OWTS applications must 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 they 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, and in particular those portions of the DFIRM and FIS that define the 100-year floodplain, which are in effect on the date of a property owner’s complete application for any permit or process in this Code establishes 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. In order to ensure that Boulder County floodplain regulations reflect the best data available to Boulder County, the County Engineer may recommend that the Planning Commission recommend to the Board of County Commissioners adoption of a “Boulder County Floodplain” to augment the FEMA Floodplain. The Boulder County Floodplain must be comprised of the same flood risk zone designations as the FEMA Floodplain. The purpose of adopting a Boulder County Floodplain is to facilitate use of best available data not adopted by FEMA to establish floodplain boundaries, Base Flood Elevations (“BFE”), and Flood Protection Elevations (“FPE”) to better protect residents of Boulder County from flood hazards. In no instance may the Boulder County Floodplain take out of the FO District an area or property designated as within the FO District by the FEMA Floodplain.

#### **4-402 Designation of Official**

- i) The following reports designate the location and boundaries of the FO district:
  - i) That portion of the Floodplain study entitled 'Floodplain Information/Boulder Creek and South Boulder Creek (Boulder County Volume II),' August 1969, prepared for the Denver

- Regional Council of Governments by the Department of the Army, Omaha District, Corps of Engineers, which includes all of South Boulder Creek and Boulder Creek in the unincorporated areas west of Valley View Road and east of the Boulder City Limits.
- ii) ~~'Floodplain Information/Lower St. Vrain Creek (Boulder County Volume III),' June 1972, prepared for the Urban Drainage and Flood Control District/the City of Longmont/Boulder County by the U.S. Army Corps of Engineers (Omaha, Nebraska).~~
  - iii) ~~'Floodplain Information Report/Lefthand Creek, Volume 1 (Mouth to Foothills Highway),' December, 1981, prepared for Boulder County, City of Longmont and the Colorado Water Conservation Board by Gingery Associates, Consulting Engineers.~~
  - iv) ~~'Floodplain Information Studies/Upper Lefthand Creek, Volume II, (Foothills Highway to Peak to Peak Highway),' August, 1983, prepared for Boulder County and the Colorado Water Conservation Board by Simons, Li and Associates, Consulting Engineers.~~
  - v) ~~'Floodplain Information Report/Upper Boulder Creek and Fourmile Creek,' December, 1981, prepared for Boulder County and the Colorado Water Conservation Board by Gingery Associates, Consulting Engineers.~~
  - vi) ~~'Flood Hazard Area Delineation/Lower Boulder Creek (Valley View Road to Boulder-Weld County Line),' March, 1983, prepared for Urban Drainage and Flood Control District, Colorado Water Conservation Board and Boulder County by Muller Engineering Company, Inc., Consulting Engineers.~~
  - vii) ~~That portion of the floodplain study entitled, 'Flood Hazard Delineation/Boulder Creek and Dry Creek (Number Three),' June, 1975, for Urban Drainage and Flood Control District and Boulder County by Leonard Rice Consulting Water Engineers, Inc., which includes Dry Creek Number Three.~~
  - viii) ~~———'Flood Hazard Analysis/Coal Creek and Rock Creek, Boulder and Weld Counties, Colorado,' October, 1976 prepared by U.S. Department of Agriculture, Soil Conservation Service in cooperation with the Colorado Water Conservation Board, Urban Drainage and Flood Control District, Coal Creek Water Users Association, Boulder County and Weld County.~~
  - ix) ~~'Floodplain Information/Dry Creek (Number Two) Boulder County—Weld County, Colorado,' June, 1978, prepared for Boulder County, Weld County and Colorado Water Conservation Board by the Department of the Army, Omaha District, Corps of Engineers.~~
  - x) ~~'Floodplain Information and Flood Control and Drainage Plan/Dry Creek Number One,' April, 1980, prepared for Boulder County, City of Longmont and the Colorado Water Conservation Board by Water Resource Consultants.~~
  - xi) ~~'Floodplain Information Report/St. Vrain Canyon Upstream of Lyons, Boulder County, Colorado,' October, 1978, prepared for Boulder County and the Colorado Water Conservation Board by Camp, Dresser and McKee, Inc.~~
  - xii) ~~That portion of the study entitled, 'Floodplain Information/Big Thompson River, Loveland to the Larimer—Weld County Line, Colorado/Little Thompson River, Boulder and Larimer Counties Near Berthoud, Colorado,' June, 1977, prepared for Larimer County, Boulder County, Larimer-Weld Council of Governments and the Colorado Water Conservation Board by the Department of the Army, Omaha District, Corps of Engineers, which includes the Little Thompson River in Boulder County.~~
  - xiii) ~~'Floodplain Information, Flood Control and Floodplain Management Plan for Coal Creek at Erie, Colorado,' August, 1980, prepared for Boulder County, Weld County, and the Town of Erie and the~~

~~4.3.Floodplain.~~ The maps in these reports depicting the floodplain for the base flood shall be considered the official maps for the purposes of locating the ~~FO district and establishing those areas affected by the provisions and regulations of this Section.~~ 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, and the 'Flood Insurance Study,' effective December 18, 2012, and the Flood Insurance Rate Maps of Boulder County as prepared by the Federal Emergency Management Agency) are hereby incorporated by reference into this Code. ~~The location and boundaries of the FO district established by this Section are also incorporated into this Code, and are depicted upon the official zoning district maps.~~

The County Engineer shall keep copies of

- a. Floodplain Re-analysis and Floodway Delineation, North St. Vrain and St. Vrain Creeks, Boulder County, CO, by Love & Associates, Inc., October, 1992; and
- b. Any area defined as floodway in the reports cited definition of Floodway in Section 4-414.

~~2.4.All 402(A)~~ records pertaining to floodplain development must be on file 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 must maintain digital maps delineating the location and boundaries of the FEMA Floodplain and the Boulder County Floodplain. The FEMA Floodplain map must depict in plan view the horizontal boundary of the flood hazards described in the underlying flood studies, as published effective by FEMA. The Boulder County Floodplain map must 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 must 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 must maintain records of superseded versions of the Official Map for historical reference.

## **B-C. Interpretation of Official Maps**

- i) ~~Where interpretation is needed as to the exact location of the boundaries of the FO district which uses, parcels, structures, or other facilities are located in or out of the FO District, including in situations where there appears to be a conflict between a mapped boundary and actual field conditions, the County Engineer shall~~must make the necessary interpretation by referring, as necessary, to the best available data at that time. Sources of best available data include without limitation the engineering study upon which the maps and elevations are based, ~~to the professional engineers who prepared the study, to the Colorado Water Conservation Board, and/or the Federal Emergency Management Agency.~~
- ii) ~~The base flood 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 elevations, as shown on the flood profiles and in the elevation tables, shall be the governing factor in determining accurate boundaries.~~

~~A. Review, Floodway, and Amendment due to Physical Change~~

- 1. ~~In the event that significant changes occur or are proposed within the FO district, such as other flood control measures, channelization, stream improvements or risk data available from state or federal agencies, and any other alteration or change in the watercourse, there shall be an evaluation of the boundaries of the floodplain as follows:~~
  - 1. ~~The reliable source which the County Engineer, in conjunction with the Colorado Water Conservation Board and the Federal Emergency Management Agency, will study the magnitude of the apparent change and determine whether there is need for a full scale study of the boundaries with a view to possible revision. finds meets an acceptable level of technical accuracy as determined through prevailing industry practices.~~
  - 2. ~~The~~Should use of aerial photography to interpret FO District boundaries, but without the consideration of local terrain data, must be for informational purposes only, and not for making determinations as to the exact location of the boundaries of the FO District.
  - 3. If the County Engineer makes an interpretation as to 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.

**D. Amendment of Official Map**

- 1. The FEMA Floodplain within the FO District will be deemed automatically 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 any person or persons, as a result of 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 whatsoever 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 because such a study or for other reasons, desire to approval was previously granted during hearings on amending the Boulder County Floodplain.
- (ii) Alternatively, 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. Unless otherwise provided in this Section 4-403(D) (for example, an automatically adopted DFIRM update), a change the boundaries of any FO district, the procedure for rezoning set forth in in the boundary of the FO District which results in a portion or all of a parcel being added to or removed from the FO District requires review and approval of a Zoning Map Amendment by the Planning Commission and the Board of County Commissioners per the provisions of Section 4-1100 shall be followed. Upon approval of changes to the Official Map by the Planning Commission and the Board of County Commissioners, the County Engineer must revise the Official Map accordingly.

In addition, proposed boundary changes of any FO district that has been approved and incorporated into the National flood Insurance Program shall also conform with the Federal Emergency Management Agency's map revision/amendment process.

1. ~~Amendment~~ Due to the Incorporation of New Studies

- 3. If the Colorado Water Conservation Board officially designates and approves additional floodplain reports affecting any river or creeka property owner in the unincorporated area of FO District feels that the provisions of this Section should not apply to some or all of their property because the building or ground elevations are above the corresponding BFE, then (1) as to the Boulder County, and upon review by the Federal Emergency Management Agency, 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. Evidence of LOMA approval must be provided to the County Engineer.

4. An shall review such reports and make recommendations to the interpretation by the County Engineer 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 result in an amendment to the Official Map that requires review and approval by the Planning Commission regarding and Board of County Commissioners.
  - a. If the Board of Adjustment overturns a determination of the County Engineer after hearing an appeal, the County Engineer is authorized to make any necessary amendments or additions to the modifications to the Official Map or its underlying supporting documentation without need for further approval by the Planning Commission or the Board of County Commissioners to get a Zoning Map Amendment approved, regardless of how many parcels are affected; provided, however, that 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 of the FO district established by FEMA, interested parties must use FEMA's LOMC process or consult FEMA on other options for modification.
5. Clerical errors in the Official Map may be corrected by the County Engineer as they are discovered from time to time, without need for approval by the Planning Commission or the Board of County Commissioners, regardless of how many parcels are affected.
6. From time to time, 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 must 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.
7. 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 are required to submit technical data to FEMA in the form of a map revision request within six months of the date of completion of a project where changes (either increases or decreases) in the 100-year water surface elevation greater than 0.3 foot result
8. 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 must first 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~~ The procedure for such amendments is set forth in Article 16 of this Code

## 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, which requires applicants to demonstrate that development projects, 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 for projects in the Floodway and greater than 0.50 foot for projects in the Flood Fringe.

B. **Uses Prohibited in Floodway.** Under no circumstance may the County Engineer issue a Floodplain Development Permit for the following activities and uses, which are prohibited within all mapped Floodways:

1. Construction of new Permanent buildings (either residential or non-residential);
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 which 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;~~

## ~~4-403~~ Floodway

~~a. No development, encroachment, use, or alteration in, on or over any part of the floodway shall be permitted which alone or cumulatively with other such uses would cause or result in:~~

~~a) the occupation of permanent or temporary structures;~~

~~1.7. the development or use of overnight campgrounds~~ habitation;

~~2.8. the storing~~ Storing or processing of materials that are buoyant, flammable, explosive, or otherwise potentially injurious to human, animal or plant life;

~~9. solid~~ Solid waste disposal sites and central collection sewage treatment facilities ~~and new;~~

~~b) New~~ or expanded individual on-site wastewater systems;

10. , unless the potential expanded system is required to bring existing buildings up to code or is allowed per 4-405(H)(4);

11. Fences composed of solid wood or chain link, or any other fence that does not meet the Boulder County standards for fence installation;

~~3.12.~~ Any activity or use that would create the potential for solid debris (including, but not limited to garages, storage sheds, decks, and fences, etc.) or waste (, including, but not limited to on-site wastewater systems, etc.) being rubbish as defined by Article 14, to be carried downstream; or

13. ~~an~~New or expanded Critical Facilities below 6,000 feet in elevation; and

4.14. Any encroachment (including filling and grading) that would adversely affect the efficiency of the floodway Floodway or change the direction of flow or cause any increase in the base flood elevation., unless it conforms with section 4-404.2(D).

~~A.C.~~ The following open uses shall be permitted within the floodway to the extent that they are not**Uses Allowed in Floodway under Certain Conditions.** Unless prohibited in a particular area by any underlying zoning district, and only if they do not adversely affect the efficiency of the floodway Floodway, change the direction of flow, or increase base flood heights without a FEMA-approved Conditional Letter of Map Revision (“CLOMR”), or pose a significant safety hazard, the County Engineer may issue Floodplain Development Permits for the following development types and open uses within the Floodway:

~~A.1.~~ agricultural Agricultural uses such as general farming, involving the production, harvesting, storage, drying, or raising of agricultural commodities, including the raising and grazing of livestock and horses, truck farming, sod farming and wild crop harvesting; as well as temporary buildings associated with such use, as detailed in 4-405(C)(3)(c);

~~B.2.~~ uses Uses accessory to residential uses, including, but not limited to lawns, open areas, gardens, driveways, and play areas;

~~C.3.~~ industrial 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, and storage yards for equipment or machinery easily moved or not subject to flood damage (excluding junkyards and solid waste disposal facilities);;

~~D.4.~~ recreational Recreational uses not requiring permanent Permanent or temporary structures buildings designed as habitable space, unless a special event permit has been issued for human habitation; a temporary building;

~~E.5.~~ utility Utility facilities such as dams, power plants, spillways, transmission lines, pipelines, water monitoring devices, water supply ditches, irrigation ditches and laterals; and open mining;

~~i) open mining; or~~

~~ii) road and highway structures.~~

6. ~~Any development~~ Construction or installation of hydraulic structures such as bridges, culverts, weirs, diversions, drop structures, and fish ladders, for access and flood or stormwater control; and

7. ~~Certain Critical Facilities above 6,000 feet in the floodway shall be permitted only upon application~~ elevation, as discussed in 4-405(E).

**D. Uses Allowed in Flood Fringe under Certain Conditions.** Any use permitted by the underlying zoning regulations must 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 Onsite Wastewater Treatment Systems (OWTS), when allowed, must conform to the requirements of 4-405(H).

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.** In order to avoid undue hardship to property owners within Boulder County, yet remain in compliance with FEMA regulations regarding Floodplain permitting, the County Engineer and the issuance of is hereby authorized to create a floodplain development permit-General FDP, updated periodically, in accordance with the provisions of this Section 4-404.1. The intent of the General FDP is to allow certain limited uses and activities in the Floodplain without the need to apply for and gain approval of an Individual FDP, because the nature and extent of these uses and activities will likely not increase BFEs or have an adverse effect on neighboring properties, species, or ecosystems.

### **B. Notification Process.**

1. Notification of the County Engineer is required for certain types of projects covered by the General FDP (listed in 4-404.1(C) below) in order for the County Engineer to consider individual and cumulative impacts, ensure minimum compliance with federal and state floodplain rules, and confirm that the work conforms with the intent of the General FDP. For those projects where the County Engineer receives notice as a referral required by a separate Land Use Code review process (such as Site Plan Review or Special Use Review), duplicative notification of the County Engineer is not required. For all other projects that require notification, the applicant must submit the following information to the County Engineer a minimum of 30 days prior to commencing work:

a. Project Description, including materials description and a discussion on the expected impact to the channel and floodplain;

b. Location Description (an accompanying location map is best); and

c. Site Plan, if necessary to further describe the work.

2. If the work is consistent with the intent of the General FDP, the County Engineer will respond to the owner with this confirmation. 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.

**C. Uses and Activities Eligible for a General FDP.** The County Engineer may in his professional judgment determine that the following activities will not result in increases to BFEs or have an adverse effect on neighboring properties, species, or ecosystems and, consequently, that such projects are deemed approved under a General FDP. Under the General FDP, for certain projects described below, owners must notify the County Engineer in accordance with the procedures in 4-404.1(B) above.

1. Activities that require notification 30 days prior to commencement:

a. Road and trail widening, surface type changes, and overlays of greater than six inches (if fill is necessary for widening, an Individual FDP is required);

b. New parking lots greater than 0.1-acre;

c. New underground utilities that do not permanently alter topography and are :

(i) Greater than 250 feet in length and installed perpendicular to flood flows; or

(ii) Installed under a perennial stream channel.

d. Temporary in-stream diversions or dewatering (limited to temporary construction diversions and temporary diversions to maintain an adjudicated water right; under the General FDP, the dewatered reach must not exceed 300 feet, and may require additional permitting through the Colorado Department of Public Health and Environment);

e. In-Kind Replacement of storm drainage system or infrastructure components including but not limited to hydraulic structures such as culverts and check dams. An individual FDP is required for all replacement bridges. An individual FDP may also be required if: physical conditions of the channel have changed to the extent that in-kind replacement is not possible and/or Boulder County suggests replacement with a different design and/or size or new component;

f. Private storm drainage infrastructure repairs and Maintenance

g. Fences not in the Floodway;

2. Activities that do not require notification:

a. Road, trail, parking area, and driveway patching, sealing, milling, dirt/gravel leveling, and repair of drainage-related damage to match adjacent grade (these activities must not increase grade by 6 inches or more);

b. New driveways, trails, sidewalks, roads and streets constructed completely at or below-grade;

c. Public drainage system and infrastructure repairs and Maintenance, including normal or regularly-scheduled maintenance to restore function and/or usability, not to exceed the previously-existing design. Sediment removal associated with this work is limited to culverts, bridges, and ditch headgates to restore normal function, limited to within the channel 300 feet upstream and downstream of these hydraulic structures. In all cases, repairs and Maintenance performed under the General FDP must not lower the normal channel invert elevation.

d. Replacement guardrails that are no taller than the previous guardrails, and that do not decrease the available open area for the passage of floodwaters; (new guardrails or replacement guardrails that do not meet the above criteria require an Individual FDP);

e. Flood-deposited sediment removal in the overbanks and floodplain areas, limited to 6 inches or less (greater than 6 inches requires Individual FDP)

f. Debris removal limited to large, woody, unanchored or dead vegetation and rubbish as defined in Article 14;

g. Routine maintenance of utility and ditch easements and ROWs;

h. New overhead utilities, including supporting structures, as well as maintenance of overhead utilities;

i. New underground utilities that do not permanently alter topography and are:

(i) Less than 250 feet in length; and

(ii) Installed parallel to flood flows

j. Repair and Maintenance of underground utilities (work must not permanently alter topography);

k. Installation of sign or mailbox posts, telephone poles, or similar elements, unless more than 5 such elements are located along a line of the same bearing that are not parallel to flow and could create an obstruction;

l. Repair or replacement of existing piers or posts supporting a conforming deck;

m. Activities associated with construction stormwater BMPs, including but not limited to temporary erosion control measures, etc.;

n. General farming, pasture, horticultural activities, and forestry that do not involve earthwork that permanently alters the topography or any clearing/grubbing of an area greater than 0.1 acres;

o. Temporary buildings or structures associated with general farming, pasture, horticulture, and forestry activities that do not exceed 120 square feet (200 square feet for loafing sheds) and are outside of the Floodway;

p. Repairs necessary to correct existing violations of Boulder County health and safety codes or to ensure safe and healthy living conditions, such as:

(i) Electrical repairs;

(ii) Furnace repairs or replacements;

~~i.a. Water heaters, boilers, and evaporative cooler repairs or replacements; The provisions of this Article 4-400 may be waived for properties within a floodway that require a repair or replacement of an existing on-site wastewater system, provided the County Engineer determines that the proposed repair or replacement is consistent with Subsections 1. through 3., below.~~

~~1.(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~~

- ~~i) 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.~~
- a) ~~The proposed repair or replacement design must be protective of groundwater and appropriate for a floodway. In making this determination the County Engineer shall consider the following factors, among other pertinent information:~~
  - 1. ~~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.a. Whether there is room for an at-grade recirculating sand filter, or similar treatment media, and the required absorption area;~~
  - ~~(+)(iii)~~
  - ~~(iv) Air conditioner repairs or replacements;~~
  - ~~(v) Repairs or replacements to roof coverings; and~~
  - 2. ~~Insulation or simple weatherization or energy efficiency upgrades; What permit requirements might exist or be imposed for on-going operation and maintenance and advanced treatment; and~~
  - 3. ~~Whether placement in the hydraulic shadow of a legal, pre-existing structure is possible.~~
- b) ~~In no event shall a proposed repair or replacement increase the overall capacity of the existing on-site wastewater system. In addition, the County Engineer may approve a raised absorption system or installation of a vault only as a last option within the floodway if this option meets the provisions of Article 4-407(B).~~
- c) ~~The County Engineer may impose terms and conditions on any waiver that may be granted to ensure that the proposal meets the requirements of this Article 4-403.D.~~
  - ~~(vi)~~
    - ~~q. Gardening and landscaping including planting vegetation, mulching, and raised beds less than 12 cubic yards total (but not hardscaping such as retaining walls, terraces, etc.); and~~
    - ~~r. Lawns and lawn maintenance activities.~~

**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.**

~~**4-404 Floodfringe**~~

- a) ~~Any use permitted by the underlying zoning regulations shall be permitted in the floodfringe, provided the use meets the floodproofing requirements of Paragraph 4-405 of this Section.~~
  - 1. Any development in the floodfringe shall be permitted only upon within the floodplain that does not meet the criteria of a General FDP requires an Individual

FDP prior to beginning the work or a determination by the County Engineer that no type of FDP is required at all.

2. 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.
3. Anyone considering a project in the Floodplain that varies from those projects described above should contact the County Engineer to determine if an Individual FDP application ~~to the~~ 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.

**B.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 the issuance of a floodplain development permit/or stormwater permits from Boulder County, as well as other state and federal permits.

#### **4-405 Floodproofing**

G. All insubstantial improvements where the lowest floor of the**Updates to General FDP.** To reflect changes to federal, state, or local regulations or guidance or for other good cause, from time to time the County Engineer may propose updates to the terms and conditions of the General FDP. A copy of the approved General FDP, 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, Flood Protection Measures. 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.

~~1.—Certification that the building or improvement is not above the flood protection elevation shall be floodproofed as follows:~~

~~i) The improvement, including attendant and sanitary facilities, be designed so that the structure is watertight with walls substantially impermeable to the passage of water below the flood protection elevation; the structure is anchored to prevent flotation, collapse, or lateral movement of the structure; and the structure is constructed with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.~~

~~ii) The improvement be certified by a Colorado Registered Professional Engineer that the floodproofing methods are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces, and other factors associated with the base flood. Such certification shall also state the specific elevation (in relation to mean sea level) to which the improvements are floodproofed.~~

~~2.—All new construction and substantial improvements shall be floodproofed as follows:~~

~~1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure and capable of resisting the hydrostatic and hydrodynamic loads.~~

~~2. All new construction and substantial improvements of any building or other structure shall have the lowest floor (including basements and porches) elevated to or above the flood protection elevation, provided that:~~

~~a) Fully enclosed areas below the lowest floor that are subject to flooding and used solely for parking of vehicles, building access, or storage of materials in an area~~

other than a basement shall be designed to equalize the hydrostatic pressure flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

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

~~a.(i) The bottom of all openings shall be no higher than one foot above grade; and~~

~~b.(i) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.~~

~~b) Accessory structures (detached garages, sheds, and barns) and agricultural structures (including grain bins, corn cribs, and barns) may be constructed at grade and wet floodproofed by meeting the provisions for fully enclosed areas subject to flooding and subject to the following conditions:~~

~~a) The building must be used only for the parking of vehicles or storage of tools, materials and equipment;~~

~~Agricultural structures (including grain bins, corn cribs, and barns) must be limited in use to agricultural purposes; in accordance with~~

~~b) The structure shall not be designed or used for human habitation;~~

~~e) The accessory structure must represent a maximum investment of less than 10% of the value of the principal structure on the property, or a maximum floor area of 600 square feet;~~

~~d) The structure must have low flood damage potential with respect to both the structure and its contents; and~~

~~e) Permanently affixed sanitary facilities and appliances (such as furnaces, heaters, washers, dryers, etc.) are prohibited.~~

~~e) Accessory structures that do not have at least two rigid walls (including carports, gazebos, and picnic pavilions) may be constructed at grade and do not require floodproofing.~~

~~d) Other accessory structures that do not meet the above requirements may be constructed at grade and will only be permitted by a variance to this section, provided that:~~

~~A. Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters; and~~

~~Service facilities such as electrical and heating equipment shall be elevated or floodproofed.~~

3. ~~All new construction and substantial improvements on a property removed from the floodplain by the issuance of a FEMA Letter of Map Revision Based on Fill (LOMR-F) shall have the lowest floor elevated to or above the flood protection elevation that existed prior to the placement of fill.~~

~~i.f. All new construction and substantial improvements of any building or other structure, within areas of shallow flooding, as specifically defined by the Federal Emergency Management Agency, shall have the lowest floor (including basements, garages, carports, and porches) elevated to or above the flood protection elevation measures outlined in 4-405(C) for new~~

construction and 4-413 for improvements to existing nonconforming buildings.

- ~~i) For shallow flooding areas, bridges, culverts, other hydraulic structures, work within the County Engineer may reduce the elevation requirement, upon evaluation of the floodplain on channel banks, and around the proposed development.~~
  - ~~ii) Such a reduction shall have the lowest floor elevated stream restoration projects, in addition to one foot the items listed above the base flood elevation, or the highest established adjacent grade plus at least one additional foot above the depth of flooding number specified in feet on the Flood Insurance Rate Maps, or at least three feet above the highest established adjacent grade if no depth number is specified.~~
  - ~~iii) Drainage improvements within a shallow flooding area, as specifically defined by the Federal Emergency Management Agency shall be constructed to allow floodwaters to flow around the perimeter of the structure in a controlled manner, without adversely impacting adjacent properties.~~
- ~~4. New construction and substantial improvement of any below grade crawlspace shall:~~
- ~~i) Have the interior grade elevation, that is below base flood elevation, 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, the following a flood;~~
  - ~~iv) Meet the provisions of Sections 4-405(B)(1), Anchoring; 4-405(B)(2)(a), Openings in Enclosures Below the Lowest Floor; and 4-405(C), Other Floodproofing Requirements.~~
- ~~5. Unsubstantial improvements, of any building or other structure, shall either have the lowest floor of the improvement elevated to or above the flood protection elevation or shall be designed and constructed according to the requirements of Paragraph 4-405(A).~~
- ~~6. As built lowest floor elevations (in relation to the 1988 North American Vertical Datum, or NAV88) for all new construction, substantial improvements, other improvements, or for new manufactured home stands, shall be certified by a Colorado Registered Professional Engineer or Colorado Registered Professional Land Surveyor. Elevation Certificates shall be submitted to the Building Division Inspector and County Engineer. Failure to submit an Elevation Certificate will result in suspension of work until proper certification is provided. To ensure compliance with floodproofing requirements during and after construction, completed Elevation Certificates shall be submitted at the following times:~~
- ~~1. For slab on grade foundation, a completed Elevation Certificate or a registered surveyor's certified statement (verifying the elevation) shall be submitted when foundation forms items are completed and prior to final pour of foundation.~~
  - ~~2. For buildings on elevated foundations, a completed Elevation Certificate shall be submitted when the foundation is completed and prior to rough framing.~~
  - ~~3. For structures to be floodproofed, a completed floodproofing certificate shall be submitted when the floodproofing measures are completed. Accepted forms include the FEMA Floodproofing Certificate for Non-Residential Structures.~~

For structures that have achieved finished construction, a completed Elevation Certificate shall be submitted prior to the issuance of Certificate of Occupancy.

~~7. The storage or processing of materials that are buoyant, flammable, explosive, or in times of flooding could be injurious to human, animal, or plant life, shall be at or above the flood protection elevation.~~

~~8. Concerning manufactured home parks, 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 as the result of a flood; manufactured homes to be placed or substantially improved on sites in existing parks; and for manufactured homes not placed in a park:~~

~~ii.a. Stands or lots shall be elevated on compacted fill or on pilings so that the lowest floor of the manufactured home will be at or above the flood protection elevation. For homes placed on pilings:~~

- ~~a) lots shall be large enough to permit steps;~~
- ~~b) piling foundations shall be placed in a stable soil no more than ten feet apart; and~~
- ~~c) reinforcements shall be provided for pilings more than six feet above the ground level.~~

~~a) Adequate surface drainage shall be provided.~~

~~iii.a. New manufactured homes shall be anchored by providing over the top and frame ties to ground anchors as well as the following:~~

~~1.(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;~~

~~2.(i) 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;~~

~~1. all components of a manufactured home anchoring system shall be capable of carrying a force of~~

~~2. 4800 pounds; and~~

~~3.(i) Any additions to the manufactured home be similarly anchored.~~

~~9. Concerning recreational vehicles, at least one of the following provisions shall be met: The recreational vehicle shall be on the site for fewer than 180 consecutive days:~~

~~1. The recreational vehicle shall be fully licensed and ready for highway use.~~

~~2. The recreational vehicle shall meet the permit requirements and elevation and anchoring requirements for manufactured homes, in accordance with Section 4-405(B)(9) of this section.~~

3. Other Floodproofing

- ~~1. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage up to the flood protection elevation.~~
- ~~2. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters.~~
- ~~3. Cutoff valves or the elimination of gravity drains below flood protection elevations in new and replacement sanitation or sewerage systems shall be used to minimize or eliminate infiltration of and discharge into flood waters.~~
- ~~4. The location of new and replacement on site waste disposal systems shall be done in such a manner to avoid impairment to or contamination from the systems during flooding.~~
- ~~5. New and replacement electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be located at or above the flood protection elevation, unless exempted from floodplain development permit requirements under Section 4-407.F.~~
- ~~6. New buildings or other structures shall 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.~~
- ~~7. For all new subdivision proposals and other developments, including proposals for manufactured home parks and subdivisions, greater than 50 lots or 5 acres, whichever is lesser, located within a designated A Zone that does not include a water surface elevation, shall include a base flood elevation as part of the proposal.~~

#### ~~4-406 Responsibilities of the County Engineer~~

- ~~1. The County Engineer or designee, is responsible for the administration and implementation of the requirements of this section. Such responsibilities include, but are not limited to:
 
  - ~~1. Review floodplain development permit applications, review and make floodway/floodfringe determinations, and issue permits if the applications are in compliance with the provisions and requirements of this Section. The requirements of this Section include the approval of all necessary local, state, or federal permits.~~
  - ~~2. Obtain, review, and reasonably utilize any base flood water surface elevation and floodway data available from state or federal agencies, or other reliable sources.~~
  - ~~3. Obtain and maintain for public inspection copies of all floodplain reports and maps, resolutions of official floodplain map amendments, and all records pertaining to floodplain developments.
 

~~These records include certified lowest floor elevations, elevation certificates of floodproofing methods and floodway encroachment, and records of all variance actions.~~

    - ~~1. The County Engineer shall report variances issued on an annual basis to the Federal Emergency Management Agency.~~~~~~
- ~~2. Notify adjacent communities, potentially affected property owners, and the Colorado Water Conservation Board prior to any alteration or relocation of a watercourse.
 
  - ~~1. This is done through the publication of a notice of such proposed alteration or relocation once in a newspaper of general circulation in Boulder County.~~
  - ~~2. The County Engineer shall also submit evidence of such notification to the Federal Emergency Management Agency.~~~~

1. ~~For any alteration or relocation of a watercourse, the County Engineer shall require that maintenance of the flood-carrying capacity of the altered or relocated watercourse is provided.~~
2. ~~Make interpretations where needed, as to the exact location of the boundaries of the FO district where there appears to be a conflict between a mapped boundary and actual field conditions based upon an engineering study by the applicant.~~
3. ~~Review and transmit recommendations to the Board of Adjustment regarding requested variances and appeals pursuant to Section 4-409.~~
4. ~~Review floodplain reports approved by the Colorado Water Conservation Board and make recommendations to the Planning Commission and Board of County Commissioners regarding necessary amendments or additions to the FO district.~~

#### **4-407 Floodplain Development Permit**

~~b.3. All building permit applications shall be reviewed by the Building Division to determine whether the proposed development may be within the floodplain, or is exempted from floodplain development permit requirements under Section 4-407.F. If it appears to the Building Division that any proposed development may be within the floodplain and is not exempted from floodplain development permit requirements under Section 4-407.F., then the Building Division shall refer the application to the County Engineer. The Building Division shall not issue a building permit when floodplain issues have been raised unless the County Engineer has issued a floodplain development permit or determined that no such permit is required.;~~

~~1. Applications for floodplain development permits are to be submitted to the County Engineer and shall include the following information as applicable:~~

~~1. A completed application form with all necessary information completed.~~

~~i.a. a A plan at a scale of  $\frac{1"}{200}$  or larger, stamped by a engineer P.E. registered by in the State of Colorado, which includes:~~

~~i.i. the site location;~~

~~1. a legal description of parcel;~~

~~2. existing and proposed base flood limits and water surface elevations;~~

~~3. floodway limits;~~

~~4. channel of watercourse;~~

~~2.i. existing and proposed contours or elevations at 2' intervals;~~

~~5. existing and proposed structures, with the lowest floor elevations (including basements and garages) of each structure;~~

~~3.ii. proposed elevations to which structures will be floodproofed (, if applicable);;~~

~~iii. Floodway limits, if applicable;~~

~~iv. channel, watercourse or flowpath;~~

~~v. existing and proposed contours or elevations at 2' intervals;~~

~~vi. existing buildings~~

~~4.vii.~~ location and elevations of existing streets, water supply, and sanitation facilities, if applicable;

~~5.viii.~~ limits and total land area of all existing and proposed impervious surfaces, including ~~structures~~buildings; and

~~ix.~~ existing water supply ditches, irrigation ditches and laterals.

~~6.i.~~ existing water supply ditches, irrigation ditches and laterals.

~~ii.b.~~ A typical valley cross-section showing:

~~1.i.~~ the channel of the, watercourse, or flowpath;

~~2.ii.~~ limits of floodplain adjoining each side of channel;

~~3.iii.~~ cross-section area to be occupied by the proposed development;

~~4.iv.~~ existing and proposed base flood water surface elevations;

~~6.~~ Specifications for construction and materials of buildings, floodproofing, filling, dredging, grading, channel improvements, storage of materials, water supply, and sanitation facilities as applicable;

~~7.~~ Description of the extent to which any water course will be altered or relocated as a result of the proposed development;

~~8.~~ For development proposed within a floodway the following information is required:

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 Onsite Wastewater Treatment Systems, a Site Plan that includes items 4-404.2(B)(3)(a)(1-7) above is required, in addition to the following:

a. A ~~title~~geotechnical report prepared, certified by a licensed title insurance or abstract company containing P.E. registered in the legal State of Colorado, which includes specifications on the system type and layout, building connections, and the flood protection measures required under 4-405(H).

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(D) and (E) below.

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 ~~subject~~ 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.

~~iii.c.~~ Prior to any Alteration or relocation of a watercourse, the County Engineer must notify adjacent communities, potentially affected property and identifying, listing and certifying owners, and the CWCB in the following manner:

i. a listing of all owners of record 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(D) and 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.

~~e.8.~~ Adequate evidence of either direct ownership of the subject property or legal authority to act on behalf of the owner(s) of record;

~~1. all owners and their addresses of real property adjacent to the subject property; and~~

~~2. all owners of any surface, subsurface, or above surface estates, rights, or interests in the land adjacent to the subject property (including easements and interests in the oil, gas, mineral or water estate) or any other real property associated therewith; the nature and description of each such estate, right, or interest; and the addresses of all owners.~~

~~3. A floodway analysis by a Colorado Registered Professional Engineer using methodology acceptable to the Federal Emergency Management Agency and according to the following guidelines:~~

~~1. If a detailed hydraulic floodway analysis has not been performed, the responsibility for determining the floodway boundary rests with the floodplain development~~

permit applicant. The need for a detailed hydraulic floodway analysis shall be the decision of the County Engineer.

- ~~2. The detailed hydraulic floodway analysis shall be based on the identical hydraulic model which was used to develop the engineering study currently adopted by the Board of County Commissioners. The applicant should obtain, through the County Engineer, a copy of the input data and card deck representing the HEC 2 computer model used for their effective flood hazard study.~~
- ~~3. The model must then be updated to existing hydraulic conditions to determine what surcharge levels have already been achieved by encroachments since the floodplain was established.
  - ~~1. Alternate floodway configurations may then be analyzed based on acceptable Encroachment Methods as outlined in the current 'U.S. Army Corps of Engineers HEC 2 Water Surface Profiles Users Manual' and submitted to the County Engineer for review and approval.~~
  - ~~2. Approval will be based on demonstration that the cumulative effects of the proposed encroachment, plus the effects of encroachments since the original flood hazard area was established, does not cause more than a one foot rise in the established base flood water surface elevation.~~~~
- ~~9. At the County Engineer's discretion, where a regulatory floodway has been designated, it may not be necessary to determine the cumulative effects of existing encroachments. 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 must 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 must 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.

**Application Review Criteria.**

- ~~3. An engineering report addressing those standards set forth in Paragraph 4-407(B) of this Section.~~
- ~~4. Standards for Permit Review~~

In reviewing an application for a ~~floodplain development permit~~Floodplain Development Permit, the County Engineer ~~shall~~must first determine the specific flood hazard at the site ~~and shall in accordance with 4-403 and~~ evaluate the suitability of the proposed use ~~or development~~ in relation to the flood hazard. The

~~4.2. In addition, the~~ County Engineer ~~shall~~must then consider the following factors in reviewing ~~permit~~Individual FDP applications:

1. the effect of the proposal upon the efficiency or capacity of the ~~floodway~~Floodway;
2. the effect on lands upstream, downstream and in the immediate vicinity of the development including ~~the potential danger to persons, 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;
- ~~3.4.~~ the effect of the proposal on the flood profile and flood heights;
- ~~4.5.~~ 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;
- ~~5.6.~~ 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;
- ~~6.7.~~ whether the applicant would obtain an undue advantage compared to later applicants who might request a permit;
- ~~7.8.~~ if whether the proposed use is for human occupancy;
- ~~1.~~ the probability that materials may be swept onto other lands or downstream to the injury of others;
- ~~8.9.~~ the susceptibility of the proposed facility and its contents to flood damage;
- ~~9.10.~~ \_\_\_\_\_ the safety of access to the property in times of flood for ordinary and emergency vehicles;
- ~~10.11.~~ \_\_\_\_\_ whether any proposed changes in a watercourse will have an environmental effect on the watercourse, including streambanks and streamside trees and vegetation;
- ~~11.12.~~ \_\_\_\_\_ the relationship alignment of the proposed development ~~to with~~ the Boulder County Comprehensive Plan, Watershed Master Plans, and any applicable floodplain management programs other planning-related documents pertaining to development in Boulder County;
- ~~12.13.~~ \_\_\_\_\_ whether the cumulative effect of the proposed development with other existing and anticipated uses will increase flood heights more than ~~one foot~~ and the allowances specified in 4-404(A);
- ~~13.14.~~ \_\_\_\_\_ if whether the ~~expected~~ heights and velocities of the floodwaters expected at the site will adversely affect the development of surrounding property; and

1. ~~If the County Engineer determines that the application for floodplain development permit meets the purposes and requirements of this Section, the floodplain development permit shall be issued, with the attachment of any conditions as deemed necessary to further the purposes of this Section. Such conditions may include, but are not limited to, specifications for modification of waste disposal methods and facilities, landscaping, periods of operation, operational controls, sureties, deed restriction, and adequate floodproofing.~~
2. ~~Board of Commissioners Review~~
  1. ~~In the event that the County Engineer determines that a floodplain development permit application for any development in the floodway meets the applicable standards for approval, the permit will not be effective until 14 days after the date of permit issuance.~~
    1. ~~At the time of permit approval, the County Engineer shall do the following:~~
      - a. ~~within seven days, publish a public notice of the proposed use and the permit issuance in a newspaper of general circulation in Boulder County;~~
      - b. ~~shall transmit a copy of the notice to property owners adjacent to the property in question; and forward to the Board of County Commissioners a written statement which shall include (1) the~~
      - c. ~~location and a description of the proposed use under the permit; (2) the reasons for approval~~
    2. ~~Upon receiving the Director's statement, and before the effective date of the permit, the Board may call the permit up for review at a public hearing.~~
      1. ~~This hearing shall constitute a revocation of the permit.~~
      2. ~~At the public hearing, the Board shall consider evidence related to the permit which may be presented by the County Engineer, the applicant, or interested members of the public.~~
      3. ~~The Board shall determine whether the application meets the requirements of this article, and if it so finds, shall issue the permit, with such conditions as the deemed appropriate.~~
4. ~~Permit Expiration, Certification Enforcement~~
  1. ~~The County Building Official shall not issue any building permit for, nor shall the Director issue any use permit involving any building, structure, or other development within the FO district unless a floodplain development permit has been granted for the development.~~
  2. ~~A floodplain development permit shall expire two years after the date of issuance if the permittee has not commenced construction under the permit.~~
  3. ~~Whenever the County Engineer has personal knowledge of any violation of the provisions of this section, written notice shall be given to the violator to correct such violation within thirty days after the date of such notice.~~
    1. ~~Should the violator fail to correct the violation within this 30 day period, the County Engineer may request that the sheriff of the County issue a summons and complaint to the violator, stating the nature of the violation with sufficient particularity to give notice of said charge to the violator.~~
    2. ~~The summons and complaint shall require that the violator appear in County Court at a definite time and place stated therein to answer and defend the charge.~~
3. ~~Minor Building Permits Exempted from Floodplain Development Permit Requirements~~

1. ~~The following types of building permits will not require a floodplain development permit unless they (alone, or in conjunction with a larger project of which they are an actual or logical part) increase the structure's floor area or footprint, cause a floodplain encroachment, under Section 18-159, or constitute a substantial improvement under Section 18-206:~~

~~(i) Electrical repairs;~~

~~(ii)(i) Furnace repairs or replacements;~~

~~(iii)(i) Water heaters, boilers, and evaporative cooler repairs or replacements; Air conditioner repairs or replacements;~~

~~1. Re-roofs; Re-siding;~~

~~2. Insulation or simple weatherization or energy efficiency upgrades; Roof-mounted or existing structure-mounted solar collectors; Window and door replacements;~~

~~1. Renovation or remodel projects that cost less than \$750.~~

~~A.1. The cost of any such exempted work shall not be included in the cumulative calculation required under **Article 18** 206 (definition of substantial improvement), unless part of a substantial damage calculation or estimate:~~

#### ~~4-408 Nonconforming Structures and Uses~~

##### ~~1. Existing Structures and Uses~~

~~1. The use of any structure on land 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 following conditions: No such building structure may be expanded, improved, repaired, restored, or replaced unless the work complies with the floodproofing provisions of Section 4-405 of this Article.~~

~~If the work does not constitute a substantial improvement, then only the constructed or reconstructed portion shall have to comply with Section 4-405 of this Article.~~

~~1. If the work qualifies as a substantial improvement, then the entire structure shall be protected as required in Section 4-405.~~

~~1. A change in the use of a building or structure, as defined in Article 18-206, will require that the entire building or structure to be protected pursuant to Section 4-405, unless a waiver is granted by the County Engineer. Floodproofing requirements may be waived for a change in use if the County Engineer determines there is no potential for any significant conflict with this Article 4-400 and the following circumstances are met:~~

~~1. The existing structure is located outside of the floodway;~~

~~2. The existing structure is determined to be structurally sound by an engineer licensed in the state of~~

~~3. Colorado;~~

~~4. The cost of compliance to this Article 4-400 is less than 50% of the current value of the structure; and~~

~~a. The proposed change in use is to a use that reduces, minimizes, or otherwise creates a less intensive use or decreases human occupation.~~

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.

**D. Encroachments Prohibited; Exceptions.** Encroachments within the adopted FEMA Floodway, other than those listed in 4-404(C), are prohibited, unless it has been 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).

1. 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.
2. 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 CLOMR from the County Engineer.
3. 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 CLOMR from the County Engineer.
4. 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.
5. 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- must be followed.
6. In all instances, no increases in water surface elevation will be allowed that impact an insurable building.
7. Following project completion, FEMA Floodway encroachments that result in water surface elevation changes greater than those allowed under 4-404(C) must apply for a map revision from FEMA. See 44 C.F.R. Part 65.

**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 4-404.2(D)(1) above must apply.

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## 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.
- ~~a.~~2. No person shall may store or process materials that are buoyant, flammable, hazardous, toxic or explosive, or that in times of flooding could be harmful to human, animal, or plant life except at or above the flood protection elevation FPE, unless the materials are stored in accordance with 4-405(I) governing storage tanks.

if

3. All construction (including new construction as well as improvements below the FPE) must be built with materials and utility equipment resistant to flood damage up to the FPE.
4. All new and replacement water supply systems must be designed to minimize or eliminate infiltration of flood waters into the system.
5. 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.
6. 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 Construction**

### **1. General Requirements**

- a. All New Construction must be built using methods and practices that minimize flood damage.
- b. New Construction in the Floodway is prohibited.
- c. New Basements in the Flood Fringe are prohibited.
- d. All New 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 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 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.
- i. ~~conflict arises between~~ 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 4-404(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-(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 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-(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. Crawlspace.** New 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).

**D. Existing Buildings**

1. See 4-413 for requirements applicable to nonconforming structures and buildings.

**E. 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 (in accordance with 4-413(B)) 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.

**F. 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.

#### G. of this 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 4-404(F) of this section.

#### H. 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 On-site Wastewater Treatment Systems (OWTSSs) 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.
    - (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>	<b>F<sub>b</sub></b>	is the buoyancy force exerted on the tank, in pounds.
	<b>V<sub>t</sub></b>	is the volume of the tank in gallons.
	<b>0.134</b>	is a factor to convert gallons to cubic feet.
	<b>γ</b>	is the specific weight of flood water surrounding the tank (generally 62.4 lb/ft <sup>3</sup> for fresh water and 64.1 lb/ft <sup>3</sup> for salt water.)
	<b>FS</b>	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(H)(2) and 4-405(H)(3).
- b. 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. ~~and the provisions of Section 4-1000,~~ 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(C), Nonconforming Structures and Uses.

#### **I. 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(H)(3)(b) 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.

**J. 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.

#### **K. Elevation Certificate Requirements**

1. As built Lowest Floor Elevations (referenced to the NAVD88 datum) for all New 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, please 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.
- ~~A.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 ~~shall control~~ 4-404.2(C)(2).
- 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

### 4-409 Appeals and Variances

~~Appeals to the Board of Adjustment may be taken by any person aggrieved by his inability to obtain a floodplain development permit or by the~~ Appeal of County Engineer

### Determination

- ~~1.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 ~~Section~~ Article 4-400 may appeal to the Board of Adjustment.
- ~~1. The Board of Adjustment shall hear and decide appeals and requests for variances from the requirements of this Section 4-400.~~
  - ~~2. The Board of Adjustment shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the County Engineer in the enforcement or administration of this Section 4-400.~~
- B. Appeal Application. The procedures and requirements for the filing of appeals and variance requests are set forth in Section 2-800 (“Boulder County Board of Adjustment”), ~~the pertinent provisions of an appeal may be found in Article 3 (“Processes”), 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 (“Board of Adjustment”)(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;
- ~~a.4.~~ the effect of the interpretation on the intent of this Code, in addition to this Section 4-409, 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. In passing upon such applications~~ 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.

## **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 ~~shall consider all technical evaluations,~~ must hold a public hearing on the request following the procedures specified in section 3-205(A).
- D. Limitation on Board's Authority.** 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).
- E. Review Criteria.**
1. To grant a variance of a requirement imposed under this Article 4-400, the Board must find that all relevant factors and standards specified in other applicable sections of this Code, and 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;

a-e. the danger that materials may be swept onto other lands to the injury of others;

b-f. the danger to life and property due to flooding or erosion damage;

e-g. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners;

d-h. the importance of the services provided by the proposed facility to the community;

e-i. the necessity to the facility use or structure of a waterfront location, where applicable;

f-j. the availability of alternative locations for the proposed use or structure which are not subject to flooding or erosion damage;

g-k. the compatibility of the proposed use or structure with the existing and anticipated development;

1. the relationship of the proposed use to the Comprehensive Plan, any adopted intergovernmental agreement affecting land use, and any floodplain management program for the subject area;

h-l. the safety of access to the property in times of flood for ordinary and emergency vehicles;

i-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; ~~and,~~

j-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

1. Upon consideration of the factors of Subsection 4-409(A)(4) and the purposes of this Section 4-400, the Board of Adjustment may attach such conditions to the granting of variances as it deems necessary to further the purposes of this Section 4-400.

2. The County Engineer shall maintain the records of all appeal actions, including technical information, and report any variances to the Federal Emergency Management Agency. o. Conditions for the purposes of this Article 4-400.

#### 1. Variances

3. Generally, variances may be issued for new construction of and substantial improvements Substantial Improvements to be erected residential buildings on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing

~~structures/buildings constructed below the base flood level, providing items (i-xi) FPE, so long as the criteria in Paragraph 4-409(A)(4) have been fully considered. section 4-409(E) above are met and subject to the following:~~

~~k.a. \_\_\_\_\_~~ As the lot size increases beyond the one-half acre, the technical justifications required for issuing the variance increases.

- ~~2. Variances may be issued for the repair or rehabilitation of designated historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.~~
- ~~3. Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.~~
- ~~4. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.~~
- ~~5. Variances shall only be issued upon:~~
  - ~~1. a showing of good and sufficient cause;~~
  - ~~2. a determination that failure to grant the variance would result in exceptional hardship to the applicant; and~~
  - ~~3. a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expenses, create nuisances, cause fraud on or victimization of the public as identified in Paragraph 4-409(A)(4), or conflict with existing local laws or ordinances.~~

~~b. This type of variance may not be issued within any designated Floodway~~

~~c. Any applicant to whom such a variance is granted shall must be given written notice that the structure/building will be permitted to be built with a lowest floor/lowest floor elevation below the base flood elevation/FPE and that the cost of flood insurance will be commensurate with the increased risk associated with the reduced lowest floor elevation.~~

**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.**

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. 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 the flood protection measures described in this section 4-413(B) below.
3. A nonconforming building or structure (whether residential or non-residential) in the Floodway may be improved, repaired, restored, or replaced so long as it meets the following criteria:
  - a. No such structure may be expanded by addition of square footage, footprint, or Habitable Space.
  - b. Substantial Improvements or repair of Substantial Damage to buildings in the Floodway must conform with the requirements of 4-405 for New Construction.
  - c. If the work to improve, repair, restore, or replace 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.
4. Flood Protection Measures.
  - a. All existing nonconforming insurable buildings are subject to the tracking of major repairs, remodeling, additions, and other improvements to determine when such work would constitute a Substantial Improvement as defined by FEMA. 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.
  - b. In Boulder County, compliance with the flood protection measures of this code in the manner that is required for New Construction is required when

the cumulative percentages for the improvement cost to market value ratio exceeds 50%, as demonstrated by the following equation:

$$\frac{\text{Cost of Improvement(s)/repair of damage since 9/11/12013}}{\text{Current market value of building at time of each project or prior to incurring damages}} > 50\%$$

- (i) Improvement percentages are tracked cumulatively starting September 11, 2013.
  - (ii) Market values should be provided by the applicant in the form of a recent appraisal of the building or any other method approved by FEMA and explained within FEMA P-758. In the absence of a market value submitted by the applicant, the County Engineer will use the data available from the County Assessor to make a valuation.
  - (iii) 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.
- c. Results of the calculations will be handled as follows:
- (i) If it is determined that the work is necessary to repair Substantial Damage, or the improvement(s) constitute a Substantial Improvement, and the building is not located in the Floodway, then the entire building must be brought into compliance with 4-405.
  - (ii) For Substantial Improvements or repair of Substantial Damage in the Floodway, the requirements of 4-413(B)(6) must apply.
- d. If a conforming building is affected by an amendment to the Official Map or this Article that results in a higher BFE, and the building becomes nonconforming as a result of the BFE change, then any subsequent permits for the nonconforming building must be checked for Substantial Improvements, and must be regulated based on the higher BFE.
- e. Repairs Exempted from Substantial Improvement Calculations.
- 1. Costs associated with the following types of repairs to buildings and service equipment/systems will not be included in a Substantial Improvement calculation, as they are deemed the minimum necessary to correct existing violations of Boulder County health and safety codes or are necessary to maintain a safe and healthy living environment:
    - a. Electrical repairs;
    - b. Furnace repairs or replacements;



- a. For all buildings or structures other than primary residences, the applicant must first demonstrate why relocation entirely outside the Floodway is not practicable.
- b. 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.

(ii) Elevation using Posts, Columns, or Piles

- a. This technique requires that the posts or columns be placed in drilled or excavated holes, or that piles be driven into the ground.
- b. Posts or columns must be encased in concrete and include a footer.
- c. Posts, columns, and piles must be sufficiently anchored to resist the expected hydrodynamic and hydrostatic flood forces.
- d. Access may be allowed to extend below the FPE.

(iii) Elevation using stem walls parallel to the direction of flow

- a. This technique must allow for water to flow freely at high velocities between stem walls.
- b. Footers must be designed and installed to account for potential scour associated with flooding.

(iv) Other techniques proposed by the applicant may be approved by the County Engineer on a case-by-case basis, so long as they address the hazards typical of Floodways, as outlined in the definition of Floodway in Section 4-414.

(v) In all cases, the bottom of lowest horizontal structural member (floor joists), as well as all service equipment, must be above the FPE.

(vi) In all cases, a continuous load path from the retrofitted foundation to the elevated portion of the home is required.

(vii) For non-residential buildings, the applicant must first consider the retrofit requirements for residential buildings in this Section 4-413(B)(6), but at a minimum, the requirements of 4-405(C)(3) must apply.

d. 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(K), 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).

**C. 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 flood protection requirements may be modified or waived for a change in use if the County Engineer determines based on good and sufficient cause shown by the applicant that there is no potential for any significant conflict with this Article 4-400 and all of the following circumstances 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 cost of compliance with this Article 4-400 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; and
  - e. The proposed change in use is to a use that reduces, minimizes, or otherwise creates a less intensive use or decreases human occupation.

reduced-lowest

## 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, whereas 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, whereas 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.** See CWCB definition.

**Effective Date.** See FEMA definition.

**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.

FEMA defines the Floodway as the channel of a river or other watercourse and adjacent land areas that must be kept free of development and other encroachments in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

The Colorado statewide standard for the designated height to be used for all newly studied reaches must be one-half foot (six inches). Letters of Map Revision to existing Floodway delineations may continue to use the Floodway criteria in place at the time of the existing Floodway delineation.

In the foothill canyons and in any drainage above 6,000 feet (NAVD88) in elevation-, based on best terrain data available during the last FO District update, and as a result of the

expected high flow velocities, the Floodway comprises the entirety of the 1%-annual-chance (100-year) flood hazard area, except where an engineering study has demonstrated that a distinction between Floodway and Flood Fringe should exist.

In Zone A or AE areas, in the absence of a specific floodway designation by FEMA or Boulder County and where the proposed development does not involve buildings or structures (but may include without limitation OWTS and LPG tanks) the Floodway will be defined as:

1. The channel or flowpath of the river, stream, or other watercourse and areas of the floodplain where the product number of flood depth (in feet) multiplied by flood velocity (in feet per second) is greater than 4, based on the 1987 Colorado State University flume study. Flow depth and velocity can be determined from a number of sources, including, but not limited to hydraulic modeling, water surface elevation information, terrain data, and flood risk products created specifically to display depth and/or velocity; or
2. Those areas determined to be Floodway based on an engineering study.

For development involving buildings, the responsibility for determining a proposed Floodway boundary rests with the applicant. Once proposed by the applicant, it must be reviewed by Boulder County to determine if the proposed project is in the Floodway or Flood Fringe.

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.

**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.** See FEMA definition.

**Letter of Map Change, Revision, Amendment.** See FEMA definition.

**Lowest Adjacent Grade.** See FEMA definition.

**Maintenance.** Maintenance means any activity undertaken to repair or prevent the deterioration, impairment, or failure of any utility, structure, or infrastructure component, including, without limitation, the removal of sediment, debris, and vegetation, installation of erosion and sediment control devices, and the replacement of structural components, so long as the work does not expand the previously-permitted condition. 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.
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”

# Exhibit D

Internal, Public, and Subject Matter Expert Written Comments received regarding  
Docket DC-15-0004

## Carroll, Ryan

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**To:** Blum, Varda  
**Subject:** RE: Floodplain Text Amendments

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**From:** Don Ash [ash@scottcox.com]  
**Sent:** Tuesday, June 14, 2016 10:53 PM  
**To:** Blum, Varda  
**Subject:** Floodplain Text Amendments

Hey Varda,

I haven't talked to you in a while so I hope that things are well. I read through the code amendments. I think everything looked great. I have a few comments.

### 4-404 Pre-application Conference

A pre-application conference as defined in Section 3-201 must be held prior to the submission of an application for a Floodplain Development Permit, unless waived in writing by the County Engineer as unnecessary under the circumstances.

*Personally, I don't think that a mandatory pre-application conference is appropriate for this level of permitting. I think for most design professionals, this conference should be "recommended." For instance, we do dozens of septic permits in the floodplain every year that would not require a pre-application conference. I'm not sure how easy this waiver would be obtained from the County Engineer in these situations.*

4-407 C. Uses Prohibited in Floodway. Under no circumstance may the County Engineer issue a Floodplain Development Permit for the following activities and uses, which are prohibited within all mapped Floodways:

1. Construction of new permanent structures (either residential or non-residential);

*I think this needs some clarification. The way that I read the definitions outlined in the Code, this provision would prohibit bridges within the floodplain. I don't think that this was the intention. I think that some clarification would be appropriate.*

4-408(c)(2) b. New construction in the Floodway is prohibited.

*In my opinion, this provision is particularly onerous and unnecessarily restrictive. I think a more agreeable solution would be to quantify this prohibition with ...unless it can be shown that the proposed improvements will not cause a rise in the 100-year water surface elevation." This would align more with the FEMA floodway requirements. For instance, BRC 1981 9-3-4 states "(e)*

*No person shall carry out any other development that results in any rise in the elevation of the one hundred-year flood." I think this language would be more appropriate.*

4-408(c)(2) d. All new construction must be constructed with materials and utility equipment resistant to flood damage up to the FPE.

g. New and replacement Service Equipment, including, but not limited to, electrical, heating, ventilation, plumbing, and air conditioning equipment, must be located at or above the FPE.

*I acknowledge that FEMA requires that all utility equipment be elevated to the FPE. As you know, the City of Boulder allows elevation to the BFE. Although I understand the benefit of added flood protection, this provision would be somewhat onerous on exterior service equipment. In addition, the ICC requires that electrical service equipment be installed a certain distance above grade. Therefore, there should be some exclusions given to code compliance conflicts.*

That's all that I have. Unfortunately, I have another meeting at the City at 3:30 so I may miss the hearing. I'll swing by afterwards to see if I can make a statement during the public comment period.

Thanks again.

D

**Donald P. Ash, P.E.**

Chief Civil Engineer



**Carroll, Ryan**

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**To:** Carroll, Ryan  
**Subject:** RE: Floodplain code for review

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**From:** Babbitt, Lucas  
**Sent:** Monday, July 18, 2016 11:54 AM  
**To:** Blum, Varda  
**Cc:** Tagert, Chris; Carroll, Ryan  
**Subject:** RE: Floodplain code for review

Hi Varda,

Attached are my suggested revisions/additions to 4-405.1. Please review and let me know if you have any questions.

Thanks,

Luke

**A. Notification Process.**

1. Notification is required for certain types of projects covered by the General FDP in order for the County Engineer to consider individual and cumulative impacts, ensure minimum compliance with federal and state floodplain rules, and confirm that the work conforms with the intent of the General FDP. For those projects that require notification (listed in 4-405.1(C) below), the applicant must submit the following information to the County Engineer a minimum of 30 days prior to commencing work:

a. Project Description;

**Comment [BL1]:** ...Including materials to be used and expected impact to channel and floodplain.

2. Activities that do not require notification:

a. Road, trail, and parking area patching, sealing, milling, dirt/gravel leveling, and repair of drainage-related damage to match adjacent grade (these activities must not increase grade by 6 inches or more);

b. New driveways, greenway trails, sidewalks, roads and streets constructed completely at or below-grade;

c. Drainage system and infrastructure repairs and Maintenance limited to sediment removal from culverts and ditch headgates within XXX feet upstream and downstream of the structure, vegetation maintenance, and outfall and bridge repairs) to restore to previously existing design;

**Comment [BL2]:** I'd suggest placing a volume limitation on how much material could be removed. I'd also suggest not allowing the channel invert to be lowered and limiting floodplain sediment removal to a maximum of 6" depth (guess).

d. In-kind replacement of storm drainage system or infrastructure components (reserved for hydraulic structures such as bridges, culverts, check dams, etc (if physical conditions of the channel have changed to the extent that in-kind replacement is not possible, and for new components, an individual FDP is required);

**Comment [BL3]:** I'd suggest moving this to the list that requires 30 days notification. With many of these the opportunity exists to improve in-stream conditions by making slight modifications to the structure configuration/location without adding expense, and with an in-kind replacement. For example, check dams are typically very bad for the creek. However, if someone wants to replace one, I'd recommend they cut a low-flow notch in the crest of the structure. This would help convey low flows and sediment, and wouldn't cost anything extra. This is just one of many examples that could fall in this category.

e. Debris removal;

**Comment [BL4]:** Consisting only of alluvium or woody material.

Alluvium – Limited to:  
-XX CY  
-Must not result in the removal of vegetation  
-Must not lower the channel invert  
-Must not lower the floodplain elevation by more than 6" (this is an estimate)

Woody material – debris must be unanchored and not require excavation in the channel and/or floodplain for removal.

I'd also suggest that this fall within the 30 day review category, but understand why it's here.

## Carroll, Ryan

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**To:** Jessica Olson  
**Subject:** RE: Floodplain code review committee

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**From:** Jessica Olson [<mailto:jolson@lwog.org>]  
**Sent:** Thursday, July 21, 2016 3:16 PM  
**To:** Martin, Christian P.; Blum, Varda  
**Cc:** McKay, Julie; Carroll, Ryan; 'Chris Wiorek'; Maya MacHamer ([fourmilewatershed@gmail.com](mailto:fourmilewatershed@gmail.com))  
**Subject:** RE: Floodplain code review committee

Hi Christian, Ryan and Varda- Here are comments that I've received from LWOG so far, and an excel table with my questions. I believe Maya is going to send in questions and comments from Four mile separately. I'll also pass along any other comments/questions that I receive.

Thanks,

Jessie

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Jessica J. Olson

Lefthand Watershed Oversight Group | LWOG

303.530.4200 (office) | 303.746.7937 (cell)

[jolson@lwog.org](mailto:jolson@lwog.org) | [www.lwog.org](http://www.lwog.org)

Please note my new email address.

## Summary of Comments on DC-15-0004: Proposed Boulder County Land Use Code Text Amendments

### General Comments:

These goals should work in cooperation with property owners, and should not be used as a blanket imposition. In other words, the County should work with property owners to find the best solution for their situation, one that will not work against the flood recovery and resilience efforts of property owners. In certain cases, property owners have sought permits to repair flood damaged property. The County declined these permits under the argument that property owners must first bring their entire properties into code compliance before any permits would be issued. This policy works against flood recovery and prevents property owners not only from moving forward, but in some cases, earning much needed income from their properties. The County should work in favor of flood recovery, not against it. It should work in favor of its citizens, not against them.

To what extent can road structures be allowed to inhibit flow and/or become a collection point for debris? This potential obstruction needs to be quantified and codified. If bridges are allowed to raise the level of the creek, then all other restrictions placed on property owners to cause no rise in creek levels is irrelevant, and hypocritical. Why restrict a rise in one location and allow a rise in another, especially when that rise (at bridges) damages adjacent properties as was the case with so many bridges during the 2013 flood? This double standard is irresponsible and intentionally has placed and continues to place private property at risk of damage.

### Comments Specific to Proposed Land Use Code Article 4 Amendments dated June 15, 2016:

4-405.B.3.	Why does this not also apply to bridges? Many county bridges clearly decrease conveyance and flood carrying capacity.
4-407.C.8.	This means no storage of any wood, equipment, animal housing, etc. that might float away in a flood. Therefore, most pasturing of animals (moveable loafing sheds, watering tanks, etc.) and storage of farm equipment containing fuel/oil (tractors) is prohibited. This presents an unreasonable burden on many farming operations.
4-407.C.11.	This needs to be researched so that the many white horse fences, mesh fences, and barbed wire fences are not in violation.
4-407.C.12.	Similar to #8. above.
4-407.C.14.	Such as a BRIDGE!
4-407.D.	It appears that bridges are no longer allowed in Floodways as was the case in the existing code. This change is good in that many bridges in the County adversely affect the efficiency of the Floodway, change the direction of flow, increase base flood heights, and pose a significant safety hazard.
4-407.D.1.	This needs to address watering tanks, loafing sheds, etc. that are part of grazing operations. As well as the materials used in farming that could float away in a flood.
4-408.B.2.	So, these items can be stored above the flood level inside a structure that meets this code, as allowed in 4-407.C.8.
4-408.C.1.a.	Who determines what methods and practices minimize flood damage? Provide a code reference.
4-408.C.1.b.	Does this include Accessory Structures listed in 4-408.C.3 below? If so, then loafing sheds and moveable stock shelters cannot be placed in floodways. That significantly restricts agricultural use of private property.
4-408.C.3.a.(i).	Why this extreme requirement only for Commercial Structures? Shouldn't this be subject to the use of the structure whether it needs to be impervious to water rather than a blanket restriction to all commercial structures?
4-408.C.3.b.(i).	Does this also include portable loafing sheds?
4-408.C.3.b.(i).	This only refers to basements in flood fringes. Is this the intent here?
4-408.D.1.	This section is not clearly written. Are the referenced repairs due to flood damage, or any repairs and/or improvements made to a property regardless of the reason for such

	improvement?
4-408.D.1.	What is a Substantial Improvement Calculation? No definition exists in Article 18 or this Article. Who checks for Substantial Improvements? How is this check performed? Who is responsible for maintaining Substantial Improvement records?
4-408.D.1.a.	Does the County Engineer really want every property owner to notify them whenever they do any sort of repairs or weatherization (e.g. caulking windows, weather stripping doors, changing to energy efficient light bulbs, etc.)? This sounds ridiculous.
4-408.D.1.a.	I see no mention of structural repairs in this section. To what does this refer?
4-408.D.1.a.	How are these violations determined? Where do they come from? Are these repairs only to be reported if a violation has been identified? Or, are all such activities to be reported?
4-408.D.1.b.	However, it appears they must be permitted and reported to the County Engineer as stated in pp. a. above.
4-408.D.1.b.	Should this be (i) through (vi)?
4-408.D.1.b.	Since all of these items (i) through (vi) are listed below pp. a. above, then these activities all require a General FDP and must be reported to the County Engineer each time they're conducted by a property owner. This seems to be placing an excessive burden on property owners to them to notify the County Engineer when doing simple maintenance and repair of appliances and/or putting in some weather stripping and such. I can't even caulk a window or change a light bulb without notifying the County Engineer under this section.
4-408.D.1.d.	This renovation cost is low and would easily be exceeded in many interior or exterior renovation projects, thereby subjecting the entire structure to complete compliance with this code. It would appear that Substantial Improvement Calculations relate to flood damage repair costs, not routine upgrades, maintenance, and repairs. According to this code, all of these costs above \$1000 will be cumulative and will have detrimental impact on the owner. The cost needs to be higher.
4-408.D.1.d.	In paragraph a. only a General FDP is required for all work listed below that paragraph which includes this paragraph. Why is an Individual FDP required here?
4-408.D.2.	According to pp. 1 above, this would include any improvement work done including caulking windows, cleaning a furnace, changing a light bulb, etc., all of which require a permit. Improvements are not defined other than in Article 18 which has little or nothing to do with this section.
4-408.D.3.	What is the purpose of this calculation?
4-408.D.3.a.	Why cumulative? Were improvements prior to this date cumulative? What is the purpose of cumulative improvement calculations?
4-408.D.4.a.	It appears that any work a property owner does on their structures (including those low cost items listed above) need to be reported to the County Engineer, added up (unless exempted above), and when those costs reach a certain limit, the entire structure needs to be brought into compliance. This is a major change in the code since in the past compliance wasn't required unless repair/upgrade costs for ONE project exceeded a certain limit. Now, this appears to cumulative beginning 9/11/2013. I can only assume that the County's goal is to slowly bring all structures in the FO into compliance with this code at the cost of the property owner. While this supports the goal of protecting the public, at the same time it creates a significant financial burden on the public.
4-408.D.5.	This paragraph is what may represent potentially significant cost to property owners. If Base Floodplain Elevations are raised, then anyone doing work on their building structure that was previously in compliance may need to be upgraded to meet these new construction standards. Costs to property owners may be excessive and prohibitive, forcing them to sell out. Is this the County's goal?
4-408.D.14.	If it is a non-residential structure, then non-residential requirements should apply. NOT residential requirements.
4-408.I.1.	It appears existing tanks are excluded.
4-408.K.1.	Since accessory structures may also be new construction, does a PE need to certify its

	placement?
4-417 Floodway:	And yet, bridges have been proven to be an encroachment that restricts the discharge of the base flood and significantly increases the water surface elevation.
4-417 Floodway:	If responsibility for determination rests with the applicant, then Boulder County cannot disagree, since it was determined by the applicant, not Boulder County. If the County wants to make the determination, then the County should be responsible.

Section

Question/Comment

4-403 (A-2)  
All

Need to Define "best available data" or refer to 403 C1  
References 4-\_\_\_ need to be updated throughout

Appears all ditch infrastructure repairs and maintenance would fall under this category. Would maintenance activities for LWOG's stream restoration projects fall under this category? Our maintenance activities include weed control, revegetation, and potentially infrastructure repair (repairing rock veins and drop structures), sediment removal to maintain a particular cross section as defined in a design.

4-407.1 (B-2c)

What's the definition of vegetation maintenance? All types and methods of weed control?

4-407.1 (B-2c)

What is the definition of debris removal? Does it include trash removal? Dead and live material?

4-407.1 (B-2e)

What's the definition of routine maintenance? What type of easement would be included? All easement types?

4-407.1 (B-2f)

Doesn't most farming involve earthwork? Or would tilling soil be included as clearing/grubbing?

4-407.1 (B-2k)

Would biostabilization techniques (willow revetments) be included in this category?

4-407.1 (B-2l)

How did you come up with the 12 cubic yard value?

4-407.1 (B-2F)

When is a grading permit required? Would it be required if you were moving 12 cubic yards of material for gardening purposes?

4-407.2 (B-7)

Can you provide an example of this circumstance?

4-417

It would be helpful if you included a list of acronyms in the definitions. "Effective Date" definition references "FEMA" but that definition is missing. If maintenance activities are not covered under the general permit would we be able to include these activities in our initial project description such that it is included in the individual permit? Maintenance is required for three years following construction thus, I'm wondering if we would have to reapply for a individual permit each year after the permit expiration or if there would be a more streamlined approach.

4-414

**From:** Jessica Olson [mailto:[jolson@lwog.org](mailto:jolson@lwog.org)]  
**Sent:** Wednesday, July 27, 2016 5:26 PM  
**To:** Carroll, Ryan  
**Subject:** FW: Floodplain code change comments

Hi Ryan- Can you take a look at the text below and let me know if Chris is understanding/interpreting our meeting discussion this correctly?

Thanks,

Jessie

---

Jessica J. Olson

Lefthand Watershed Oversight Group | LWOG

303.530.4200 (office) | 303.746.7937 (cell)

[jolson@lwog.org](mailto:jolson@lwog.org) | [www.lwog.org](http://www.lwog.org)

Please note my new email address.

**From:** [Chris@cjsa4.inbox5.com](mailto:Chris@cjsa4.inbox5.com) [mailto:[Chris@cjsa4.inbox5.com](mailto:Chris@cjsa4.inbox5.com)]  
**Sent:** Wednesday, July 27, 2016 4:57 PM  
**To:** Jessica Olson  
**Subject:** Floodplain code change comments

Hi Jessie,

As we discussed, I prepared a basic outline of my comments on the proposed Boulder County Floodplain code (Land Use Code Article 4). I hope these comments and clarification provided by the County Floodplain office will help inform property owners of certain aspects of the proposed changes and their impact on property owners.

These comments can be grouped into 3 categories:

1. What floodplain work requires a permit?
2. What agricultural uses are allowed in a floodplain without a permit?
3. What is the Cumulative Substantial Improvement Calculation and what home improvements and repair fall within that calculation?

Based on responses from the Floodplain Compliance Department at Boulder County, the following clarification was provided:

1. What requires a permit?

Rather than “any man-made change” to a property which would assume anything done to change a structure of any sort, it actually means any work requiring a building permit. That clarification agrees with the FEMA document “Substantial Improvement/Substantial Damage Desk Reference, FEMA P-758 / May 2010” which states: “Communities will only have records of work for which permits are required. Therefore, even though it uses the word “any” it doesn’t seem to mean it. It only means work for which permits are required. This needs to be written more clearly in the new code updates.

**Comment [RC1]:** This statement is a bit misleading. Some types of work do not require a BP, but still require a FDP. Examples include walls less than 4’ tall, septic, grading less than 50 cubic yards, certain types of accessory structures, certain size decks, and certain types of repairs/maintenance

**Comment [RC2]:** Please see the FEMA definition of Development, which is fairly all-inclusive. 44 CFR 60.3 (NFIP regulations) requires permits for all development in the floodplain.

2. What agricultural uses are allowed without a permit?

After discussion about the various typical farming activities within the floodplain, it was agreed that additional clarification is needed as to the types of accessory structures that will be permitted in the flood fringe (no structures or equipment will be allowed in the floodway). The code already allows for certain accessory structures such as detached garages, sheds, barns, grain bins, etc., but these must all be secured to the ground such that they cannot float away in a flood and require engineered construction drawings. However, it doesn’t address portable loafing sheds, stock watering tanks and the like. These cannot and should not be anchored with engineering drawings and calculations according to the code. They need to be moveable and the code should allow for removal of such items in the event of a flood similar to provisions for RV’s and other farm equipment. The county agreed to look into such situations.

3. What is the Cumulative Substantial Improvement Calculation and what activities fall within that calculation?

FEMA requires communities in the National Flood Insurance Program (NFIP) to maintain certain minimum regulations for activities in floodplains. Those activities focus mainly on reducing damage to property and regulating property uses that would contribute to flood damage. One such regulation relates to bringing a structure into current code compliance when an owner performs a “Substantial Improvement” or must make repairs due to “Substantial Damage.” If the cost of work done under these 2 situations exceeds 50% of the value of the structure, the entire structure must be brought into compliance with current codes.

The Cumulative Substantial Improvement Calculation currently in place in Boulder county is different. All improvements made over the life of a structure regardless of its owner are tracked and their costs accumulate until they exceed the 50% value of the structure. Of course, by cumulatively tracking improvement costs, properties will likely need to be upgraded to current codes much sooner than under the base Substantial Improvement calculation. The most significant upgrade for most homes in the flood overlay will likely be raising the lowest level (basement or crawlspace) above the flood elevation. While there are provisions for variances to this requirement, this is the goal of the program. FEMA’s goal is to reduce property damage and one way of accomplishing that goal is to keep property out of the floodplain. Boulder county has adopted that goal through its code requirements and have been tracking improvements for many years. However, beginning on September 11, 2013, cumulative calculations were reset to zero so that the major repair work required after the flood would once again begin accumulating toward

the 50% cutoff.

The Cumulative aspect is part of a NFIP/FEMA voluntary program (the Community Rating System – CRS) which provides discounts on flood insurance rates. Depending on the various allowed activities in the program communities can receive between 5 and 45% discounts. The city of Boulder and Boulder county are currently listed as class 5 and receive a 25% discount (Longmont is a class 8 community and receives a 10% discount). A Cumulative SI calculation approach adds points to the ~~CSA~~ CRS rating and may increase the class/discount depending on how many other activities are also in place.

**Comment [RC3]:** This is not the only reason that Boulder County has elected to track improvements cumulatively. Cumulative tracking strikes a balance between allowing a certain amount of improvements to take place in the floodplain while working towards creating safety and resilience in the floodplain. More compliant homes means less flood damage, increased public safety, and less risk to emergency personnel during a flood event.

As mentioned in item #1 above, in-general, only the work done under a building permit is included in the Cumulative Substantial Improvement Calculation. FEMA goes on to elaborate that “Owners may undertake work that does not require a permit (e.g., patching a roof or replacing a window) and those costs would not count towards the cumulative substantial improvement. It is not the intent of a cumulative substantial improvement requirement to discourage general maintenance and upkeep. However, if any part of the work requires a permit, then all of the proposed work is counted in the SI/SD determination. For example, as part of a project to repair roof damage that involves replacing rafters and underlayment, the owner may decide to replace shingles on an undamaged portion of the roof. The cost of the re-shingling is included in the determination.” Again, the code revisions should include this clarification.

**Comment [RC4]:** There may be certain instances where a BP is not required but the Floodplain Group would still track improvement costs towards the SI calculation. Examples include certain improvements to accessory structures that are exempt from BPs, certain size decks, certain aspects of remodeling (installation of new cabinets, countertops, etc).

Since this aspect of the CRS is optional and voluntary, it is not required. Since it is not required, it could be eliminated from Boulder County’s CRS program calculation. The result may be higher flood insurance premiums for property owners, but the amount of increase can only be determined as the county recalculates the class rating using the FEMA formulas. I suggested to the Floodplain office that property owners be allowed to make the choice whether to participate in the optional Cumulative calculation program and accept higher insurance rates. I don’t imagine the County will eliminate this requirement unless a significant number of property owners speak up and demand a voice in the decision. One method of making such a demand is through the code commenting process. Another is through letters to the County Commissioners. Property owners need to evaluate the potential increase in insurance rates over the cost of bringing their properties into code compliance sooner under the cumulative calculation requirement. Each property owner’s situation is different and each property owner places value in different areas. Therefore, each property owner needs to make their own evaluation and petition the County as they choose the approach best suited to their situation.

**Comment [RC5]:** Boulder County has received many comments and concerns about Cumulative SI tracking. The County is considering changes to these requirements, but the changes may not show up in the current code revisions going to Planning Commission and BOCC this in Aug-Sept.

**Comment [RC6]:** Discounts under the CRS program are applied community-wide and cannot fluctuate based on optional compliance. Insurance premiums, however, can fluctuate based on the amount of flood protection per building. The higher your first floor elevation relative to the BFE, the lower your insurance premium. The discount percentage applied is a constant.

**Comment [RC7]:** FEMA has done case studies to look at the potential costs one might encounter when elevating a home vs. incurring higher insurance rates and greater flood damage costs. We can try to dig these up and make them available to the public/coalitions.

## Carroll, Ryan

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**From:** Moline, Jeffrey  
**Sent:** Tuesday, August 02, 2016 11:01 AM  
**To:** Carroll, Ryan; Strenge, Ernst  
**Cc:** Blum, Varda  
**Subject:** RE:

Thank you Ryan,

Just a couple of comments. The definition of structure is tricky for me. This would prohibit the construction of new, permanent non-residential structures in the floodway. However, "flood control," restoration, and irrigation ditch diversions are likely to be constructed in floodways... How does the Code accommodate that? Also, I see that irrigation ditches can be allowed in the floodway conditionally. I'm also trying to understand the scope of the code and how our ag program might be affected by the provision below. So, as long as plowing and cultivating don't alter the topography" agriculture would be exempt, right? Clearing and grubbing does not apply to agriculture, right?  
Jeff

405.1.C.2.k General farming, pasture, horticultural activities, and forestry that do not involve earthwork that permanently alters the topography or any clearing/grubbing of an area greater than 0.1 acres;

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**From:** Carroll, Ryan  
**Sent:** Thursday, July 28, 2016 3:38 PM  
**To:** Plank, Ted; Strenge, Ernst; Moline, Jeffrey; Goodell, Gary; Rasmussen, Jon  
**Cc:** Blum, Varda; Martin, Christian P.  
**Subject:**

Hello everyone,

As many of you may know, the Floodplain Group within Transportation has been working on code amendments to 4-400 covering floodplain development. We've held a study session with Planning Commission, have reached out to the Watershed Coalitions and held public meetings, and have also distributed the draft to some familiar structural engineers, architects, water resource engineers, septic engineers, and builders. Some of you have already seen draft revised code language and have provided some comments. We're asking that you dive back in one final time before we prepare another draft for Planning Commission in August. We'll need to have our staff recommendation and latest draft complete by August 9th for August 10th submittal/distribution. Our second Planning Commission hearing is scheduled for August 17th.

The latest draft available for review is attached. This is an INTERNAL draft and we ask that it remain that way until our next required public release with the staff recommendation on August 10th.

For those of you interested in the General Floodplain Development Permit language, it can be found in section 4-405.1 on page 8. The Maintenance definition (still a work in progress...well, the whole thing is really) is at the end in Section 4-417. If anyone is interested in meeting next week to discuss any of the changes, we can make ourselves available.

Thanks in advance for any comments, questions, and recommendations you might have! If you will be providing a response, we ask that you do so no later than next Thursday, August 4th.

Take Care,

## Carroll, Ryan

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**From:** John Winchester <john@highcountryhydrology.com>  
**Sent:** Wednesday, August 03, 2016 11:19 PM  
**To:** Carroll, Ryan  
**Subject:** RE: Subject Matter Expert review of revised floodplain Land Use Code (Boulder County floodplain regulations)  
**Attachments:** 400\_Floodplain Code DRAFT for PC (8 Jun 2016) [jnw].docx

Ryan,

Here is a redlined version of the Land Use Code with some thoughts.

Thanks for the opportunity to comment.

John

**From:** Carroll, Ryan [<mailto:rcarroll@bouldercounty.org>]  
**Sent:** Thursday, July 21, 2016 4:44 PM  
**To:** [sullseptic@aol.com](mailto:sullseptic@aol.com); [boulderseptic@gmail.com](mailto:boulderseptic@gmail.com); 'lonvhe@airbits.com'; Tom Bergman; [davidvhe@airbits.com](mailto:davidvhe@airbits.com); Bill Melvin; William Wilkinson; [bill@wilkinsonengineering.com](mailto:bill@wilkinsonengineering.com); [wentwrth@aol.com](mailto:wentwrth@aol.com); [jonathan@lopezsmolensengineers.com](mailto:jonathan@lopezsmolensengineers.com); E.J. Meade; Mike Donohoe; [kcooper@cooperbuildinggroup.com](mailto:kcooper@cooperbuildinggroup.com); [ash@scottcox.com](mailto:ash@scottcox.com); Ed Glasgow; [scott@rodwinarch.com](mailto:scott@rodwinarch.com); John Winchester; Scott Schreiber ([Scott\\_Schreiber@matrixdesigngroup.com](mailto:Scott_Schreiber@matrixdesigngroup.com)); Robert Waggerby; [robert\\_krehbiel@matrixdesigngroup.com](mailto:robert_krehbiel@matrixdesigngroup.com); Curt Parker, PE; Brian Mazzochi; [david.bidelspach@fivessr.com](mailto:david.bidelspach@fivessr.com); [SLeslie@drexelbarrell.com](mailto:SLeslie@drexelbarrell.com); 'don@parkengineering.net'; [SteveSmith@applegategroup.com](mailto:SteveSmith@applegategroup.com); [paul@gebau.com](mailto:paul@gebau.com)  
**Cc:** Blum, Varda; Martin, Christian P.  
**Subject:** Subject Matter Expert review of revised floodplain Land Use Code (Boulder County floodplain regulations)

Hello,

Boulder County relies heavily on the expertise that exists within the many consultants and contractors performing work for the County as well as private property owners. As such, the County is reaching out to select firms to solicit any comments, suggestions, or questions you may have on the current working draft of the revised Boulder County floodplain regulations (Section 4-400 of the Boulder County Land Use Code). Changes

to the current regulations may affect the work you are performing, and your review of these changes could benefit permitting of future projects.

The attached draft (provided in both PDF and Microsoft Word) was given to the Boulder County Planning Commission for review in early June, in preparation for a working session on June 15. I've also provided a table that breaks down all changes into a more-easily consumable format. Additional changes and refinement of the current draft is ongoing, and multiple groups have been asked to provide input into the code update process. Our next trip to Planning Commission is scheduled for August 17. The purpose of these revisions is to provide clarity to a sometimes ambiguous permitting process, to ensure we are meeting NFIP and State minimum requirements for floodplain management, and to enact requirements based on lessons-learned following the 2013 floods.

Here is a basic breakdown of the sections where we feel your feedback (as-applicable to the type of work you do) would be the most beneficial:

<b>Requirements for new construction-</b>	<b>4-408[C]</b>
<b>Requirements for improvements to existing structures-</b>	<b>4-408[D]</b>
<b>OWTS/Septic Requirements-</b>	<b>4-408[H]</b>
<b>Boulder County General Floodplain Development Permit-</b>	<b>4-407.1</b>
<b>Modeling in support of permit submittals-</b>	<b>4-405[B] and 4-407[B]</b>
<b>Defining the Flood Protection Elevation-</b>	<b>4-408[A]</b>
<b>Nonconforming structures/uses-</b>	<b>4-416</b>
<b>Definitions-</b>	<b>4-417</b>

If you are interested in reviewing certain content of the revised regulations and providing feedback, please do so no later than Friday August 4. You can send your feedback directly to me or Varda Blum ([vblum@boulderCounty.org](mailto:vblum@boulderCounty.org)), or to the following address:

[floodplainregsmapscomment@bouldercounty.org](mailto:floodplainregsmapscomment@bouldercounty.org)

John Winchester Comments

1. If the work is consistent with the intent of the General FDP, the County Engineer will respond to the owner with this confirmation. 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. If the County Engineer does not respond at all to the owner's notification by close of business on the 14<sup>th</sup> day after transmission, the work is deemed approved.
1. When development is proposed in the Floodway during a declared local disaster emergency, the requirements of 4-xx above will not apply. Instead, at the time of Floodplain Development Permit application submittal, the County Engineer must transmit a notice of the proposed use to property owners adjacent to the subject property. If the County Engineer decides to issue the permit, the permit will be effective on the date of permit issuance.

**Comment [jnw1]:** This seems sketchy. What if someone doesn't check their mailbox, can they legitimately claim they weren't notified and so they thought the work was approved? Or someone applies on the day of a major disaster, and the County Engineer is swamped and doesn't respond. The work is automatically approved?

**Comment [jnw2]:** I'm not sure what a "declared local disaster emergency" is. Unless this is a defined term somewhere, how about "disaster or emergency"?

## Carroll, Ryan

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**From:** Strenge, Ernst  
**Sent:** Friday, August 05, 2016 5:26 PM  
**To:** Carroll, Ryan; Moline, Jeffrey  
**Cc:** Blum, Varda; Glowacki, Therese; DeLeo, Claire; Hardy, Al; Hirt, David; Reynolds, Sean; Atherton-Wood, Justin; Rounds, Jesse; Laiho, Douglas; Kc, Prashant; Alexander, Robert  
**Subject:** RE:

Ryan,

Sorry I didn't get this to you sooner. I have been out sick today.

Boulder County Parks & Open Space staff have reviewed the draft code amendments to 4-400 covering floodplain development. We have the following comments:

1. As Jeff Moline mentioned to you in a previous e-mail, the definition of and prohibition of structure in the floodway causes concern (see #1, 2, and 3 on page 7), as it would prohibit the construction of new, permanent non-residential structures in the floodway, such as those for resiliency, public safety, restoration, and irrigation ditch diversion projects. Can you verify whether these would be prohibited under this code amendment?
2. On page 7, #11 states "Fences composed of solid wood...or any fence that does not meet the Boulder County standards for fence installation" are prohibited in the floodway. Could you provide further clarification on this as a number of agricultural fences are in the floodway?
3. On page 7, #12 states "Any activity or use that would create the potential for solid debris...to be carried downstream" is prohibited in the floodway. Many restoration projects throughout the county are planning to install large woody debris (LWD), which would be engineered for stability. The LWD provides both habitat and bank protection benefits. We assume that LWD is not included in this prohibition, correct?
4. On page 8, #14 states "Any encroachment (including filling and grading) that would adversely affect the efficiency of the Floodway or change the direction of flow..." would be prohibited. Many stream restoration projects throughout the county may need to change the direction of flow through channel realignment, which would likely be done to have a positive effect and not an adverse effect on the efficiency of the floodway. We assume changes in alignment, whether for public safety, protection of infrastructure, or as determined by a natural channel design, are not included in this prohibition, correct?
5. On page 8, #4 states "Recreational uses not requiring permanent or temporary structures designed for human habitation..." Can you define what is meant by "human habitation"? We are wondering how this would effect BCPOS recreational facilities (e.g. adding rocks across a stream for access).
6. On page 10, #2c, how are you defining a "greenway trail"? Can it be concrete or natural surface? Will either be allowed as long as they are at or below grade?
7. Jeff Moline also had questions to you in his previous e-mail about "plowing and cultivating" and "clearing and grubbing" for ag purposes and whether they are or could be exempt under k. on page 10. Without an exemption for these routine and standard farming and ditch maintenance operations and activities, we believe the agricultural community will likely forego getting permits. Therefore, we request that these minor ag practices be exempt and/or that it be spelled out more completely of which activities do require a permit. Of course, we understand work on stream diversions and ditch construction projects would require permits.
8. "Debris removal" is listed as eligible under a General Permit (page 10). However, it is unclear what constitutes "debris". Can you provide parameters around this?

9. Can “natural bank stabilization / bioengineering” and replanting be included in “Activities that do not require notification”?
10. On page 12, #7b states that an applicant needs to state “the specific person(s) responsible for maintenance” over a 30-year long maintenance period. This seems unrealistic that the same person would be around for 30+ years. Maybe think of another way to state this.
11. Could there be a simplified process for stream restoration projects that utilize natural channel design, either under the General Permit or the Individual Permit processes? We understand the need to regulate these projects if they are creating major changes within a Floodplain Overlay District (i.e. the need to meet conveyance and flood carrying capacity requirements). However, many stream restoration projects only have minor impacts (e.g. minor bank stabilization or habitat improvements). Could these be included under the list of “Uses and Activities Eligible for a General FDP”? This may require some guidelines about what constitutes a “minor” project.
12. On page 19, how would BCPOS facilities (e.g. a bridge) be considered under “non-residential structures”? We would like clarification of how these facilities would be handled under the amended code.

Let me know if you have questions or concerns.

Thank you,  
Ernst

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**From:** Carroll, Ryan  
**Sent:** Friday, August 05, 2016 10:10 AM  
**To:** Plank, Ted; Streng, Ernst; Moline, Jeffrey; Goodell, Gary; Rasmussen, Jon  
**Cc:** Blum, Varda  
**Subject:** RE:

Thanks Jeff for your comments. Just a reminder that if anyone else has comments, please get them to us ASAP.

Thanks,

Ryan

Ryan M. Carroll, CFM  
Boulder County Floodplain Management Consultant  
Boulder County Transportation Department  
Michael Baker International  
[rcarroll@bouldercounty.org](mailto:rcarroll@bouldercounty.org)  
303-842-4375 (c)

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**From:** Carroll, Ryan  
**Sent:** Thursday, July 28, 2016 3:38 PM  
**To:** Plank, Ted; Streng, Ernst; Moline, Jeffrey; Goodell, Gary; Rasmussen, Jon  
**Cc:** Blum, Varda; Martin, Christian P.  
**Subject:**

Hello everyone,

As many of you may know, the Floodplain Group within Transportation has been working on code amendments to 4-400 covering floodplain development. We've held a study session with Planning Commission, have reached out to the Watershed Coalitions and held public meetings, and have also distributed the draft to some familiar structural engineers, architects, water resource engineers, septic engineers, and builders. Some of you have already seen draft revised code

## Carroll, Ryan

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**From:** Maya MacHamer <fourmilewatershed@gmail.com>  
**Sent:** Monday, August 08, 2016 12:46 PM  
**To:** Carroll, Ryan  
**Subject:** Re: FDP code comments  
**Attachments:** FDP code amendment comments.pdf

Hi Ryan,

I received some more comments from some Fourmile folks. I added them to the original spreadsheet and highlighted the new ones. I realize that your timeframe is getting tight before the 10th. Again, I didn't edit the comments, but some would have been clarified had the code been read closely. For example, obtaining a General Permit is not really getting a permit. I think some of these misconceptions could be turned into an FAQ sheet that might simplify things for landowners and reduce capacity demands for you guys. Other questions relate to floodplain mapping and can be easily addressed as well. I may try to summarize the floodplain mapping project and send out an email or again, direct them to the state or BoCo sites for clarification.

Lastly, I am happy to rework some of these questions into FAQ's if it is helpful. I think that you, Christian and Varda may have received more FAQ's over the past 2+ years that should also be incorporated. Let me know what you think the best way to work through this is.

Thanks,  
Maya

On Fri, Aug 5, 2016 at 10:48 AM, Carroll, Ryan <[rcarroll@bouldercounty.org](mailto:rcarroll@bouldercounty.org)> wrote:

Thanks Maya! I will add them to our list and begin working on responses. FYI, our staff recommendation to Planning Commission is due next Wednesday, the 10<sup>th</sup>. This document will also be available to the public. We will include a spreadsheet attachment listing all the comments and our responses, in addition to an updated copy of the revised code that incorporates any changes that result from the comments. If there any comments you would like to discuss in more detail before the staff recommendation is submitted, please let me know!

Thanks,

Ryan

Ryan M. Carroll, CFM

Boulder County Floodplain Management Consultant

Boulder County Transportation Department

Michael Baker International

[rcarroll@bouldercounty.org](mailto:rcarroll@bouldercounty.org)

[303-441-4843](tel:303-441-4843)

[303-842-4375](tel:303-842-4375) (c)

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**From:** Maya MacHamer <[fourmilewatershed@gmail.com](mailto:fourmilewatershed@gmail.com)>  
**Sent:** Friday, August 5, 2016 7:32 AM  
**To:** Carroll, Ryan  
**Cc:** Blum, Varda  
**Subject:** FDP code comments

Hi Ryan,

Attached are a collection of comments regarding the FDP text amendments. Let me know if you have any questions.

Thanks,

Maya

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**Maya MacHamer**

Watershed Coalition Coordinator

Fourmile Watershed Coalition

1740 Fourmile Canyon Dr.



**To:** Boulder County Transportation; Floodplain Development

**From:** Fourmile Watershed Coalition

**Date:** August 8, 2016

**Re:** Comments relating to proposed floodplain code amendments

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Thank you for soliciting comments from community members in unincorporated Boulder. The Fourmile Watershed Coalition has gathered comments from community and Coalition members and compiled them in this document. Our original intent was to create a second document with frequently asked questions, however, many of the questions and thoughts that have arisen from that conversation appear to be more focused on communicating thoughts with Boulder County or comments that require a response. A frequently asked questions document could likely be derived from the below comments in addition to those received from other areas of unincorporated Boulder. The comments in the table have not been edited so that they are not misrepresented

Thank you,

The Fourmile Watershed Coalition

<b>General Questions/Comments</b>	
	There are many people impacted by the new proposed regulations who are on fixed incomes, or lower income by Boulder standards. There needs to be a mechanism and funding in place to assist individuals with \$\$\$ if these regulations impact them. A good example of what can happen is the revised code for septic systems. In many cases this can be a \$30,000 hit to residents who have adequately function systems that don't meet the new criteria.
	It is absurd to spell out limitations of items such as barbeques and lawn chairs. These items can be removed easily enough in the incidence of flooding. Will Boulder County need to staff and FUND additional personnel to monitor and evaluate every property owner along the creek? The allocation of public funds could be put to better use!
	Existing property structures and areas along the creek need to be grandfathered in as they exist now. The re-designation and over-reaching attempts to change current property owners right is effectively a 'taking' property values and can result in an inordinate amount of dollar impact to current residents.
	Changes to the existing floodplain maps need to have a component for notification to specific property owners, and mechanism for simple dispute based on historical flooding and current FEMA maps. This means that if an area has not had impacts with the last two floods, it is most likely NOT in



	<p>the floodplain... Arbitrary re-designation using just photography or inaccurate topographic GIS information is not sufficient. It is stated that propane tanks in the floodplain need to be moved outside of it. Who will provide the funding for this?</p>
	<p>Is it true that above 6,000 feet everything is considered to be in the floodplain (or whatever the most restrictive area is called), so that my entire house is covered inside and out?</p> <p>Supposedly the regs pertain to:</p> <p>4-401.B. 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.”</p> <p>But they are obviously much more intrusive than that.</p> <p>Per FEMA’s minimum requirements, changing the existing exemption from FDP for a few categories of minor building permit work to instead be described as repair work necessary for health and safety protection that is covered by the General FDP, the value of which will not be included in a Substantial Improvement calculation.</p> <p>Now that is bureaucratic gibberish, but does it really mean that things that used to be exempt are now covered by the regs so that one has to get a permit?</p>
	<p>Do I need a Floodplain Development Permit to repair creek damage back to it's original state?</p>
	<p>Do I have to get a permit to place sand bags?</p> <p>To take other flood prevention measures?</p> <p>To lay flagstone paths?</p> <p>To plant trees, shrubs, flowers, etc.?</p>
	<p>It appears that if your furnace or hot water heater is in your basement, you cannot replace it or repair it without a general permit: 4-408. D. Existing Structures 1.a.1. Repairs Exempted from Substantial Improvement Calculations. a. The following types of structural repairs will require notification of the County Engineer, but will be covered by the General FDP, as they are</p>



	<p>deemed the minimum necessary to correct existing violations of Boulder County health and safety codes.</p> <p>(i) Electrical repairs;</p> <p>(ii) Furnace repairs or replacements;</p> <p>(iii) Water heaters, boilers, and evaporative cooler repairs or replacements;</p> <p>Will you please ask them about that?</p>
	<p>There are numerous details to code text amendments that substantially impact property owners and communities. Only recently has this information been provided to the public. In the interest of transparency, constructive input from and a greater understanding by impacted communities will require additional time for review of the amendments beyond August 17. Other formats (newsletter, local community forums) may also encourage the goals of more educated and aware communities as well as a transparent process. It would be desirable to have the presence of CWCB and FEMA representatives (as they also significantly drive the process).</p>
	<p>Could there be disaster recovery regulations and non-disaster regulations to simplify process?</p>
	<p>Is rebuilding after a disaster prohibited if the BFE is below 6000 feet?</p>
	<p>A limited review and streamlined to all flood recovery projects needs to be considered. In particular, crossings that are yet replaced create a greater risk in the floodway than the current review process corrects by looking at unrelated structures and land uses. Extending a limited and streamlined review process to those who wish to update their crossing to updated standards would encourage improvements to the efficiency and capacity of the floodway.</p>
	<p>Creating a floodplain overlay district may be premature given that revised floodplain maps are currently in development with CWCB.</p>
	<p>How will the proposed code text amendments effect rebuilding after another flood? In other words, how would a future rebuilding experience differ than our current flood recovery experience in relation to the proposed changes?</p>
<p><b>Comments on Exhibit A</b></p>	



4-407.C.2	This section outlines a broad and subjective list of criteria that the county may use to reject a permit. This section needs to be either clarified to eliminate its subjective nature or deleted. For example, item "f" allows rejection of a permit if "the applicant would obtain an undue advantage compared to later applicants who might request a permit." Because it is impossible to know the extent, nature, and scope of future permits this criteria is strictly subjective and open-ended. Also, item "k" allows rejection based on "environmental effect". Nowhere is "effect" defined and again leads to the potential to reject permits based on whim.
4-409.A.4	This criteria is vague and may lead to subjective, inconsistent decision making. For example, "the importance of services to the community" is being made by a board that may or may not be part of that community. The "effect of such damage on the individual owners" should be something the owner is willing to consider and determine rather than a board.
<b>Comments on Exhibit B</b>	
4-407.C	How are pre-existing uses addressed? Will landowners who have structures or other pre-existing uses in the floodway be forced to come into compliance by eliminating a use if they apply for another unrelated permit. In other words, will the Land Use Review process recommend not issuing an FDP permit if there are existing prohibited uses on the property?
	In a post-flood recovery process will FDP permits be issued to replace a damaged or destroyed structure or use that is one of the prohibited uses under the proposed code changes?
4-407.C.2	This section outlines a broad and subjective list of criteria that the county may use to reject a permit. This section needs to be either clarified to eliminate its subjective nature or deleted. For example, item "f" allows rejection of a permit if "the applicant would obtain an undue advantage compared to later applicants who might request a permit." Because it is impossible to know the extent, nature, and scope of future permits this criteria is strictly subjective and open-ended. Also, item "k" allows rejection based on "environmental effect". Nowhere is "effect" defined and again leads to the potential to reject permits based on whim.
4-407.C.8	How will the storage of household items that may be flammable or potentially harmful (paint, small amount of fuel etc.) be addressed for those currently living within the floodway, and will the storage of those items prevent a FDP being issued for an unrelated need.



4-407.1.B.e	General FDPs are a great idea and will contribute to streamlining and efficiency. However, guardrails can be problematic during floods in constrained canyons. Guardrails catch debris and form "dams" that can redirect flood flows or prevent them from accessing the (road) floodplain. The installation of guardrails should be included in models used to assure that there is "no rise" in the surface water elevations and attempt to account for debris within the model. At a minimum, the use of guardrails and their effect on retaining debris and flooding should be strongly considered by the County Engineer.
4-407.2.B.12	This criteria is vague and subjective. Can it be made more objective or less open to interpretation?
4-407.D	What are Substantial Improvement Calculations? Are they related to quantifying damage post-flood? If so, a section that is specifically related to construction/development in a post disaster setting may be more easily followed and/or referenced by the public.
4-410.3	The term "declared local disaster" could use expansion. Specifically, how and when the declared local disaster differs from the recovery period and then which code requirements apply to the disaster period and the recovery period.
4-410.B.1	Do emergency activities include private property needs post disaster like constructing/repair an emergency access crossing to a home. If so, this should be more specifically stated. If not, this should be otherwise addressed within the code.
4-410.B.2	This line is problematic because the cost of hiring an engineer to determine if "minor disaster recovery" work creates a rise can be prohibitive to private landowners trying to recover from a disaster. One solution may be to contact the County Engineer to see if there is an agreement (between County and landowner) on what the work being considered "minor" is and whether or not it could be temporarily (during disaster recovery) covered by a General FDP. Or, after lessons learned from the 2013 flood, an alternate General FDP list could be developed that lists "minor disaster recovery work" that can be completed without a qualified engineer creating a no rise certification.
4-410.B.2	This section outlines actions that may be taken in an emergency. This criteria requires emergency actions be hydraulically reviewed by a licensed engineer. In an emergency this criteria is unreasonable and not implementable due to the time and resources required of such analysis.
4-410.B.3	Minor edit: remove the 'and' at the end of the sentence.



4-416.B.c	Due to the increased potential of flooding after a large wildfire reconstruction can be delayed or otherwise postponed due to subsequent disasters. To benefit those attempting to rebuild after a disaster a five year period with "possible extensions approved by the County Engineer" retains needed flexibility. Limiting it to a "single one year extension" could be detrimental to those already in the building process.
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## Carroll, Ryan

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**From:** F. Yates Oppermann <yateso@comcast.net>  
**Sent:** Wednesday, August 17, 2016 11:58 AM  
**To:** Jessica Olson; Maya MacHamer; Carroll, Ryan  
**Cc:** Chuck Oppermann  
**Subject:** Proposed Floodplain Code Changes  
**Attachments:** BOCO Flood Reg Comments 08172016.pdf

All,

Last night the Lower Left Hand Watershed Association met with the purpose of putting together a homeowners FAQ related to the proposed floodplain code changes. We did not succeed.

We failed because as we moved forward we realized that the proposed code changes were so terribly conceived and executed that a simple FAQ could not hope to address the problems. Nor did we feel that this was simply a matter of addressing minor editing corrections.

Attached is our comments on the proposed floodplain code changes. and we will endeavor to have someone present this afternoon to present this at the meeting, but a 3:00 meeting is extremely difficult for most of our members to attend.

If you have questions or concerns, please feel free to contact me.

F. Yates Oppermann

President

Oppermann Environmental

673 S. Carr  
Lakewood, CO 80226

303-594-8300

[yateso@comcast.net](mailto:yateso@comcast.net)

# LLWA

Lower Left Hand Watershed Association

**To: Boulder County Transportation, Floodplain Development, Boulder County Commissioners**

**From: Lower Left Hand Watershed Association (LLWA)**

**RE: Proposed Changes to Boulder County Land Use Code related to Flood Plain Management**

**Date: August 17, 2016**

The September 2013 flood exceeded anything that Boulder County has seen in terms of flooding and associated damages to both public and private property. It also brought to light the fact that Boulder County's existing floodplain code was insufficient to guide homeowners and agency staff in both rebuilding efforts and in preventing future problems. The result has been a compounding of the natural disaster with a bureaucratic one that has seen some homeowners still unable to return to their properties three years later and a review and approval process that has wasted the time and money of the county and homeowners.

Recently, Boulder County proposed changes to the floodplain code intended to address deficiencies that exist. While changes and improvements to the code are needed, they must be done in a way designed not just to improve the health and safety of county residents, but in a manner that is meaningful, enforceable, and understandable. Unfortunately the proposed changes fail on all accounts and **should not be approved in their current condition.** As proposed, the changes to

the floodplain code are a disaster that provides no clear guidance to property owners or county staff in managing activities in the floodplain. This will cause enormous costs to the County in terms of implementation and enforcement that will have no meaningful impact on human health and safety and unacceptable costs to homeowners struggling to comprehend and comply with the code requirements.

The Fourmile Watershed Coalition has provided a list of targeted comment on the proposed code changes. Rather than reiterate these issues, we would like to address more global problems with the proposed changes to the floodplain code and the process to date.

**The proposed changes to the Flood Plain Code make it impossible for the average homeowner to determine *if* the code applied to them.**

Compliance and effective enforcement of any law or regulation must begin with the ability of the individual to be able to reasonably determine whether and how the law or regulation affects them. The proposed regulations obfuscate this and provide landowners with absolutely no meaningful means of understanding how the floodplain code applies to them or how to comply with the law. For example, the need for a more accurate and usable Floodplain Overlay District (FOD) map that can be used absent accurate information from the Federal Emergency Management Agency (FEMA) is not disputed, but the proposed process requires no demonstration that the information being used to develop the overlay district is scientifically based and necessary for the appropriate implementation of the floodplain code. This allows the County to arbitrarily change the map at any time using any sort of information they wish. As a result, landowners and potential property buyers cannot reasonably be assured that a property is or is not within the bounds of the FOD. Similarly, the proposed code changes do not make any requirements for actual notification of property owners when changes to the FOD affect their property. The only notice that is required is publication

in a newspaper in general circulation and hearing before the county commission. While this may meet the minimal standards of FEMA for public notice, it is woefully short of what is needed in light of the significant impact that changes to the FOD will have on landowners.

Similarly, the definitions of “floodway” and “flood fringe” require the assistance of a hydrologist to determine what aspects of the code apply to any property covered by the FOD. No property owner can reasonably determine what portions of their property fall within the floodway and what is within the flood fringe without going to extreme expense. Given that this can have an impact on whether or not even minor activities are allowed or must be permitted, or are outright banned, it is inconceivable that the average property owner will spend the money to determine what aspects of the floodplain code apply to them. This encourages willful ignorance of the requirements, creates an enforcement nightmare for the County staff, and negates the intended purpose of the flood plain code in protecting human health and safety.

**The proposed changes to the Flood Plain Code make it impossible for the average homeowner to determine *how* the code applied to them.**

The existing floodplain code provides no useful information for either Boulder County personnel or homeowners in determining how being in the FOD affects a landowner’s use and enjoyment of their property. The proposed changes to the code seek to address this deficiency and the tiered permitting approach is a laudable and important step that is to be encouraged. However, the actual text of the code is so convoluted and self-conflicting that it is useless to the average landowner. Compliance once again requires significant outlay of funds on the behalf of the property owner to even determine if the code applies to their action, and again this can relate to even projects of insignificant size and scope, encouraging people to ignore the code. The code could be simplified to state that

the Floodplain Director will develop a list of activities that will fall under the general permit and shall determine whether these activities require public notice before the activity commences. The list shall be reviewed at least every five years and amended as necessary after effective public notice. This would allow for a more flexible general permit that does not require amendments to the floodplain code to address evolving circumstances or unintended consequences.

Similarly, the floodplain code should start with the general land use code and demonstrate how being in the FOD affects these basic requirements. For example: If a lawn or fence is within the FOD, how does this change the requirements already established in the land use code? If these are no changes, it is unnecessary to include the item.

Perhaps the most inane aspect of the proposed changes however has to do with Substantial Improvements. This term is undefined in the proposed changes. While it seems clear that activities designed to meet basic code requirements are exempt (electrical, plumbing, roof, heater/furnace, etc.), the proposed code changes seem to include within the definition of Substantial Improvements all other renovation and remodeling projects that exceed \$1,000. This would include activities like the replacement of a garage door, repainting a house, drywall repairs, asbestos or mold abatement, replacement of flooring, replacement of interior doors, window replacement, siding replacement, and any number of other minor home management activities that have absolutely no bearing on the fitness of the home to withstand flooding or affect the potential impact of the home on flood events. The \$1,000 value is so low as to practically require that any activity done within a home be valued and tracked towards the Substantial Improvements cap and could potentially put homeowners in a situation where even an extremely minor home renovation or remodeling project could require them to engage in excessive flood mitigation measures. Substantial Improvements should be limited to activities that alter the physical

size or location of a structure. This definition would eliminate the need for the \$1,000 limit since such improvements will exceed this cost substantially, and will alleviate the need for the exceptions included in the proposed changes. Additionally, because such projects already require permit approval under the existing land use code, the ability to track such projects is improved and minimizes the need for additional processes and tracking. Without these changes, the only reasonable conclusion is that landowners will ignore the code. This will create an enforcement headache for the County and exacerbating the already poor relationship that the County has with its landowners. Ironically, this is the best possible outcome for the County. If the proposed changes are adopted and landowners did work diligently to comply with the proposed code changes, the County would be inundated with permit requests and tracking of insignificant remodeling and renovation projects that the county would be unable to effectively operate.

### **The process for public inclusion in the proposed changes to the flood plain code is insufficient.**

Given the amount of time and effort that the county has put into this process, it seems ludicrous to say that the process has failed to adequately reach landowners and the people most likely to be affected by these proposed changes. But that is exactly the case. The most recent version of the proposed changes is over 200 pages in length and written in a manner that makes it nearly impossible for most people to be able to understand. The lack of public comment on the proposed changes has nothing to do with the acceptance by the residents, and is instead a dramatic and worrisome indication of the lack of understanding that people have about the proposed code changes and the inability of the County to effectively communicate with its residents. Effectively engaging landowners and communities requires that the County engage them at a time and a place that works for the landowners. The process needs to include something more than simply a hearing at which the staff bat away public

concerns by stating that it is all being done to meet FEMA requirements. Unless and until the County takes the need to engage with its residents seriously, it cannot hope to develop a floodplain code that is viable and workable.

### **The proposed code fails to take into account the complexity of a flood event.**

The damage caused by the 2013 flood was not strictly a result of structures being in the flood plain. Public infrastructure, including inadequately sized bridges, diverted floodwaters into properties that would otherwise have seen little or no impacts from the floods. Similarly, the actions of the ditch companies to protect their infrastructure forced water into different locations, protecting an important resource to be sure, but causing damage to others as a result. It is illogical to treat all properties affected by a flood in the same manner without regard to how the actions, or inactions, of the County affected the flood.

Landowners damaged at least partially as a result of deficient bridges that the County was aware of and did nothing to address should not be penalized because of the County's actions. Where the County bears responsibility for a problem it is an injustice to blame a homeowner and require them to comply with the floodplain code when the County itself takes no action to address their own contribution. The floodplain code should make clear that if damage to a homeowner's property partially results from inadequate county owned and managed resources, that the county will assist in making the landowner whole and assist in any necessary restoration or renovation work necessary.

It is with great sadness that we make these preceding comments. As we mark the third anniversary of the flood there are homeowners who have still not been able to even begin work restoring their properties and watershed restoration work has yet to begin. The county has still not started developing a significant plan to address flooding throughout the drainages, and many homeowners feel abandoned by the county. All of which is to say that the impact of the flood continues. An update and

improvement to the floodplain code is needed. But it needs to be an improvement. As proposed, the amendments to the floodplain code fail to improve the health and safety of the county residents, create unnecessary cost and process for both the county staff and for county residents and will exacerbate the already strained relationships between the county government and the people it is supposed to be serving.

It is our great hope that something beneficial can be created and we are ready and willing to assist in any serious effort in this regard.

Sincerely,

The Members of the Lower Left Hand Watershed Association

# Exhibit E

Listing of All Comments Received, With Responses

Count	Source Type	Commenter Name/Comment Source	Comment Date	Memo Topic	Comment on: New Or Existing Content/Requirement	Section Name/Topic	Comment	Response	Update draft based on comments?	Final Proposed Floodplain Regulations Section No.
1	Public	Fourmile Coalition	8/8/2016	1- Designation of Official Maps	NEW		Changes to the existing floodplain maps need to have a component for notification to specific property owners, and mechanism for simple dispute based on historical flooding and current FEMA maps. This means that if an area has not had impacts with the last two floods, it is most likely NOT in the floodplain... Arbitrary re-designation using just photography or inaccurate topographic GIS information is not sufficient.	The County is developing an online map tool to allow the public to review proposed mapping changes and provide comments/disputes. Outreach will occur with large-scale map updates as well, and all map updates other than those published by FEMA, which go through their own public process, will go through the normal PC and BOCC hearings, which are open to the public.		4-403
2	Public	July 26 Public Meeting	7/26/2016	1- Designation of Official Maps	BOTH	LOMAs, etc.	I have a flood cert and I believe I'm out of the flood zone. What should I do?	If a property owner feels that they should not be mapped in a flood zone, they should first consult the County to determine if the zone is a part of the FEMA Floodplain or Boulder County Floodplain. If the property or structure is in the FEMA Floodplain, it could be eligible for a LOMA from FEMA. We've added a paragraph on LOMAs under 4-403(D).	X	
3	Public	July 26 Public Meeting	7/26/2016	1- Designation of Official Maps	NEW	Best Available Data	Can the County regulate in those areas outside of FEMA that it considers Best Available Data?	Yes. The Boulder County Floodplain defines areas that the County regulates outside of the FEMA Floodplain. The Boulder County Floodplain is covered in 4-403(A)(2)		4-403
4	Public	July 26 Public Meeting	7/26/2016	1- Designation of Official Maps	NEW	Regulatory Data	What applies where?	The County's FO District maps will differentiate between FEMA and Boulder County Floodplain once the code is adopted. The 2 layers combined make up the FO District, to which all of the floodplain regulations apply. There are, however, different procedures for updating each that are outlined in 4-403(D), and different procedures for modeling development in the floodway, outlined in 4-405.2(D).		4-403
5	Public	LWOG	7/21/2016	1- Designation of Official Maps	NEW	Official Map	Need to Define "best available data" or refer to 403 C1	Best available data' is not a term that Boulder County intends to define further than the way it is described and/or used in the pertinent sections.		4-403
6	Public	LLWA	8/17/2016	1- Designation of Official Maps	NEW	Public understanding of requirements	The proposed changes to the Flood Plain Code make it impossible for the average homeowner to determine if the code applies to them.	Staff has worked to make the code more comprehensible and continues to be available to answer additional questions about code applicability to a particular situation.		
7	Internal	Ernst Strenge/ Staff	POS 8/5/2016	2- Floodplain Development Permits	BOTH	Fences	1. On page 7, #11 states "Fences composed of solid wood...or any fence that does not meet the Boulder County standards for fence installation" are prohibited in the floodway. Could you provide further clarification on this as a number of agricultural fences are in the floodway?	Please see Boulder County fence requirements		4-405(B)
8	Internal	Ernst Strenge/ Staff	POS 8/5/2016	2- Floodplain Development Permits	BOTH	Solid debris in the floodway	1. On page 7, #12 states "Any activity or use that would create the potential for solid debris...to be carried downstream" is prohibited in the floodway. Many restoration projects throughout the county are planning to install large woody debris (LWD), which would be engineered for stability. The LWD provides both habitat and bank protection benefits. We assume that LWD is not included in this prohibition, correct?	Large Woody Debris included in stream restoration designs would not be restricted by this regulation.		4-405(B)
9	Internal	Ernst Strenge/ Staff	POS 8/5/2016	2- Floodplain Development Permits	BOTH	Floodway encroachments	1. On page 8, #14 states "Any encroachment (including filling and grading) that would adversely affect the efficiency of the Floodway or change the direction of flow..." would be prohibited. Many stream restoration projects throughout the county may need to change the direction of flow through channel realignment, which would likely be done to have a positive effect and not an adverse effect on the efficiency of the floodway. We assume changes in alignment, whether for public safety, protection of infrastructure, or as determined by a natural channel design, are not included in this prohibition, correct?	This is a minimum NFIP requirement. Any project proposing to change the direction of flow, adversely affect the efficiency of the floodway, etc would likely first require a CLOMR from FEMA before permitting.		4-405(B)
10	Internal	Ernst Strenge/ Staff	POS 8/5/2016	2- Floodplain Development Permits	BOTH	Habitable space/human habitation	1. On page 8, #4 states "Recreational uses not requiring permanent or temporary structures designed for human habitation..." Can you define what is meant by "human habitation"? We are wondering how this would effect BCPOS recreational facilities (e.g. adding rocks across a stream for access).	The term 'structure's here is in reference to buildings. We have updated this language to say 'habitable space'. Basically, if the use in the building is for anything other than storage, access, or parking, it is prohibited in the floodway.	X	4-405[C]
11	Internal	Ernst Strenge/ Staff	POS 8/5/2016	2- Floodplain Development Permits	BOTH	Watercourse alteration-maintenance	1. On page 12, #7b states that an applicant needs to state "the specific person(s) responsible for maintenance" over a 30-year long maintenance period. This seems unrealistic that the same person would be around for 30+ years. Maybe think of another way to state this.	Agreed. We have removed the 30-year requirement and reworded the language.	X	4-405.2(B)(7)(B)
12	Internal	Jeff Moline/POS	8/2/2016	2- Floodplain Development Permits	BOTH	Structure terminology/ definition	I see that irrigation ditches can be allowed in the floodway conditionally. What does this mean?	All floodway encroachments are subject to Boulder County and FEMA modeling requirements. Projects can be allowed if a) the applicant demonstrates that the project will not increase 100-year water surface elevations, or b) the applicant first applies for and receives approval of a CLOMR from FEMA.		4-405[C]
13	Public	Fourmile Coalition	8/4/2016	2- Floodplain Development Permits	BOTH	Review criteria	Exhibit B: This section outlines a broad and subjective list of criteria that the county may use to reject a permit. This section needs to be either clarified to eliminate its subjective nature or deleted. For example, item "i" allows rejection of a permit if "the applicant would obtain an undue advantage compared to later applicants who might request a permit." Because it is impossible to know the extent, nature, and scope of future permits this criteria is strictly subjective and open-ended. Also, item "k" allows rejection based on "environmental effect". Nowhere is "effect" defined and again leads to the potential to reject permits based on whim.	This language is taken directly from NFIP regulations and State Rules governing floodplain management, and is meant to satisfy the minimum requirements of the NFIP. It remains unchanged from our existing language in 4-400. It does not establish grounds for rejection or approval; rather, it provides the context under which all projects are reviewed. In addition, we are walking a fine line between not enough and too much content. For future code updates, we welcome examples of where less detail would be good, and can consider outside policy docs that can explain the details and give examples.		4-405.2[C]
14	Public	Fourmile Coalition	8/4/2016	2- Floodplain Development Permits	BOTH	Storage of materials above FPE	Exhibit B: How will the storage of household items that may be flammable or potentially harmful (paint, small amount of fuel etc.) be addressed for those currently living within the floodway, and will the storage of those items prevent a FDP being issued for an unrelated need.	Storage of hazardous materials should always be protected from flooding. The easiest way to do this is to elevate those materials. If the County Engineer is aware of such materials being stored below the Flood Protection Elevation, he may require that the materials be relocated before issuing any permits. In larger-scale or commercial operations, hazardous materials stored below the FPE may constitute a violation and result in enforcement action.		4-405

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15	Public	June 15 Planning Commission	7/26/2016	2- Floodplain Development Permits	NEW	Critical Facilities	We should consider making all Critical Facilities reviewable on a case-by-case basis rather than just those above 6,000 feet and prohibiting all facilities below 6,000 feet.	The CWCB 'Rules and Regulations for the Designation and Approval of Floodplains and of Storm or Floodwater Runoff Channels in Colorado' require that Colorado communities that participate in the NFIP specifically regulate critical facilities by either requiring greater elevation of the facility above the predicted water surface elevation of the 100-year flood or by prohibition of such facilities within the floodplain. Staff believes that there is adequate room outside of the floodplain in the plains, that requiring greater elevation of the facility does not provide adequate protection of community health and safety, and has decided to leave the prohibition of new or expanded critical facilities within the plains floodplain. Should there be a particular request for a new or expanded critical facility within the floodplain in the plains, and allowing that location is the minimum necessary exception to provide relief, the applicant can apply for a variance. The variance process will allow a public review for the public critical facility not afforded by a case-by-case analysis undertaken by the County Engineer.		4-408[E]
16	Public	LWOG	7/21/2016	2- Floodplain Development Permits	BOTH	Storing or processing of hazardous materials in the floodway	This means no storage of any wood, equipment, animal housing, etc. that might float away in a flood. Therefore, most pasturing of animals (moveable loafing sheds, watering tanks, etc.) and storage of farm equipment containing fuel/oil (tractors) is prohibited. This presents an unreasonable burden on many farming operations.	Many of these items are allowed but must be properly anchored or have the ability to be easily relocated if a flood warning is in effect. While this requirement may be burdensome, it is rooted in public safety and even farming operations should take the necessary precautions to prevent damage to their own assets and to prevent potentially hazardous situations downstream. This is an NFIP minimum requirement. Ignoring it could result in suspension from the program.		4-405(B)
17	Public	LWOG	7/21/2016	2- Floodplain Development Permits	BOTH	Solid Debris	Similar to #8. above.	New structures are prohibited in floodways. Permits will not be issued for development that poses a safety or health risk.		4-405(B)
18	Public	LWOG	7/21/2016	2- Floodplain Development Permits	BOTH	Uses allowed in Floodway (Ag)	This needs to address watering tanks, loafing sheds, etc. that are part of grazing operations. As well as the materials used in farming that could float away in a flood.	New permanent structures (even loafing sheds) are prohibited in floodways. Tanks may be allowed but should conform to the flood protection requirements in 4-408 for other similar tanks. Anchoring would most certainly be required. The intent of this list is to explain the uses that are allowed and are considered low-impact from a flood hazard perspective. Structures and development associated with these uses must still meet the code requirements.		4-405[C]
19	Public	LWOG	7/21/2016	2- Floodplain Development Permits	BOTH	Floodway definition	If responsibility for determination rests with the applicant, then Boulder County cannot disagree, since it was determined by the applicant, not Boulder County. If the County wants to make the determination, then the County should be responsible.	We disagree that we cannot disagree. Boulder County will review all floodplain determinations performed by applicants and their designees, including BFE determinations and Floodway/Flood Fringe determinations.		4-417
20	Public	LWOG	7/21/2016	2- Floodplain Development Permits	BOTH	Undue advantage	Can you provide an example of this circumstance?	Projects that may decrease the 100-year water surface elevation on the applicants property, but increase the water surface elevations on a neighboring property.		4-405.2[C](2)
21	Subject Matter Expert	Don Ash	6/15/2016	2- Floodplain Development Permits	EXISTING	Uses prohibited in floodway	Construction of new permanent structures: I think this needs some clarification. The way that I read the definitions outlined in the Code, this provision would prohibit <u>bridges</u> within the floodplain. I don't think that this was the intention. I think that some clarification would be appropriate.	This reference, as written, applies to buildings and not bridges. We have updated the language to clarify.	X	4-405(B)
22	Public	LLWA	8/17/2016	2- Floodplain Development Permits	NEW	Public understanding of requirements	The proposed changes to the Flood Plain Code make it impossible for the average homeowner to determine how the code applied to them.	Staff has worked to make the code more comprehensible and continues to available to answer additional questions about code applicability to a particular situation.		
23	Internal	Ernst Strenge/ POS Staff	8/5/2016	3- General and Individual FDPs	NEW		1. On page 10, #2c, how are you defining a "greenway trail"? Can it be concrete or natural surface? Will either be allowed as long as they are at or below grade?	Either surface type will be allowed as long as it is not a raised (greater than 6") surface.		4-405.1[C]
24	Internal	Ernst Strenge/ POS Staff	8/5/2016	3- General and Individual FDPs	NEW		1. Jeff Moline/POS also had questions to you in his previous e-mail about "plowing and cultivating" and "clearing and grubbing" for ag purposes and whether they are or could be exempt under k. on page 10. Without an exemption for these routine and standard farming and ditch maintenance operations and activities, we believe the agricultural community will likely forego getting permits. Therefore, we request that these minor ag practices be exempt and/or that it be spelled out more completely of which activities do require a permit. Of course, we understand work on stream diversions and ditch construction projects would require permits.	These items are covered under a General FDP. There are no permit exemptions. Clearing and grubbing over 0.1 acre will require an Individual FDP.		4-405.1[C]
25	Internal	Ernst Strenge/ POS Staff	8/5/2016	3- General and Individual FDPs	NEW		1. "Debris removal" is listed as eligible under a General Permit (page 10). However, it is unclear what constitutes "debris". Can you provide parameters around this?	We've added parameters to describe 'debris.'	X	4-405.1[C]
26	Internal	Ernst Strenge/ POS Staff	8/5/2016	3- General and Individual FDPs	NEW		1. Can "natural bank stabilization / bioengineering" and replanting be included in "Activities that do not require notification"?	If the project is only for planting vegetation, then yes, it would be included under the General FDP. If the planting is a part of a larger project, then an Individual FDP would likely be required.		
27	Internal	Jeff Moline/POS	8/2/2016	3- General and Individual FDPs	NEW	Agriculture & General FDP	How will the County's ag program be affected by the provision? As long as plowing and cultivating don't alter the topography, ag would be exempt, right?	We are not familiar with the County's agricultural program requirements, but are willing to discuss further with POS. Activities such as plowing and cultivating that do not alter the topography are NOT exempt, but they will likely be covered by the General FDP. The General FDP will be on file in the Transportation Department and will contain a list of general conditions that projects and uses must adhere to.		4-405
28	Internal	Jeff Moline/POS	8/2/2016	3- General and Individual FDPs	NEW	Agriculture & General FDP	Clearing and Grubbing do not apply to agriculture, right?	If Agricultural activities will result in the clearing or grubbing of land greater than 0.1 acre in size, then an Individual FDP is required.		4-405.1[C]
29	Public	Fourmile Coalition	8/4/2016	3- General and Individual FDPs	BOTH		Exhibit B: This criteria is vague and subjective. Can it be made more objective or less open to interpretation?	We've made minor updates to the language for this item. The goal is to align projects with the planning objectives laid out in county planning documents.	X	4-405.2
30	Public	Fourmile Coalition	8/4/2016	3- General and Individual FDPs	NEW	General Permit-guardrails	Exhibit B: General FDPs are a great idea and will contribute to streamlining and efficiency. However, guardrails can be problematic during floods in constrained canyons. Guardrails catch debris and form "dams" that can redirect flood flows or prevent them from accessing the (road) floodplain. The installation of guardrails should be included in models used to assure that there is "no rise" in the surface water elevations and attempt to account for debris within the model. At a minimum, the use of guardrails and their effect on retaining debris and flooding should be strongly considered by the County Engineer.	We have updated the guardrail language under the General FDP so that it only applies to replacement guardrails. New guardrails or the guardrails associated with new crossings must be included in hydraulic modeling submitted for permitting these features.	X	4-405.1
31	Public	July 26 Public Meeting	7/26/2016	3- General and Individual FDPs	BOTH	Permit Submittal Requirements	These requirements seem extensive and expensive. Are they in addition to what LU would require for BP?	Most times we can borrow from a BP submittal to review for FDP. There are certain items that would be necessary for each FDP that are above and beyond what LU would require, and that likely won't be changing. We have updated the submittal requirements section to eliminate any redundant items and to break out submittal requirements by project type.	X	4-405.2(B)

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32	Public	July 26 Public Meeting	7/26/2016	3- General and Individual FDPs	NEW	General FDP	Guard rails may have a significant impact on flood elevations. Maybe they should not be a part of the General FDP.	We have moved guardrails to the list of projects that require notification, have specified that only replacement guardrails are covered by the General FDP, and created criteria for replacement guardrails (no taller than previous guardrails, % of open area for flood flows must be maintained).	X	4-405.1[C]
33	Public	July 26 Public Meeting	7/26/2016	3- General and Individual FDPs	NEW	Earthwork under General FDP	What is a 'reasonable size' for gardening?	We have determined, based on criteria borrowed from other jurisdictions, that 12 cubic yards is a reasonable amount to allow under the General FDP.	X	4-405.1[C]
34	Public	July 26 Public Meeting	7/26/2016	3- General and Individual FDPs	NEW	General FDP- Utilities	Under the General FDP, what defines a utility?	Water, sewer, electric, and telecommunication lines are examples of utilities. The Boulder County Land Use Code uses this term extensively, and the County feels it does not need to be defined for the purposes of the FO District.		4-405.1[C]
35	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	Minor repairs exempt from SI calc	Does the County Engineer really want every property owner to notify them whenever they do any sort of repairs or weatherization (e.g. caulking windows, weather stripping doors, changing to energy efficient light bulbs, etc.)? This sounds ridiculous.	I agree that the Transportation Department would not want to know about every simple, minor weatherization technique in the floodplain. We've updated the language to reflect that notification of the County Engineer is not required; however, these projects must still meet the requirements of the Land Use Code.	X	4-416
36	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	Minor repairs exempt from SI calc	Since all of these items (i) through (vi) are listed below pp. a. above, then these activities all require a General FDP and must be reported to the County Engineer each time they're conducted by a property owner. This seems to be placing an excessive burden on property owners to them to notify the County Engineer when doing simple maintenance and repair of appliances and/or putting in some weather stripping and such. I can't even caulk a window or change a light bulb without notifying the County Engineer under this section.	We have moved this item under the General FDP to the list of projects that do not require notification of the County Engineer.	X	4-405.1[C](2)
37	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	Minor repairs exempt from SI calc	In paragraph a. only a General FDP is required for all work listed below that paragraph which includes this paragraph. Why is an Individual FDP required here?	The list has been moved under paragraph a). Paragraph d) is not a part of paragraph a). An individual FDP is required because remodeling has the potential to require that certain items be flood-protected in certain ways. For instance, installation of a wash basin below the FPE would need to be fitted with backflow prevention.	X	4-416(B)(4)[E]
38	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	General Permit- drainage system and infrastructure maint.	Appears all ditch infrastructure repairs and maintenance would fall under this category. Would maintenance activities for LWOG's stream restoration projects fall under this category? Our maintenance activities include weed control, revegetation, and potentially infrastructure repair (repairing rock veins and drop structures), sediment removal to maintain a particular cross section as defined in a design.	The intended application was for storm drainage works like drains, sewers, ditches, headgates, diversions, culverts, and bridges. It was not intended to cover stream restoration projects, but may cover the maintenance activities associated with the projects, once installed.		4-405.1[C]
39	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	General Permit- vegetation	What's the definition of vegetation maintenance? All types and methods of weed control?	There are likely regulations/guidelines that must be followed (either through POS, or UDFCD, etc) for vegetation removal/maintenance; however, those requirements are not covered by floodplain regs. We have removed reference to vegetation maintenance under the general permit, as it likely fits under the general terms of 'maintenance'.	X	4-405.1[C]
40	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	general Permit- Debris Removal	What is the definition of debris removal? Does it include trash removal? Dead and live material?	We have not added a definition of debris, but have clarified what is meant by debris in this section.	X	4-405.1[C]
41	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	General Permit- maintenance	What's the definition of routine maintenance? What type of easement would be included? All easement types?	We've updated the language to specify that utility and ditch easements as well as County ROWs qualify. 'Routine maintenance' is a way to describe frequency of the maintenance activities to be performed. Maintenance is defined in 4-417.	X	
42	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	General Permit- earthwork	Doesn't most farming involve earthwork? Or would tilling soil be included as clearing/grubbing?	The intent would be that tilling etc required for farming purposes would be covered by the General FDP. As long as the activities do not permanently alter the topography, these activities are allowed.		4-405.1[C]
43	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	General Permit	Would biostabilization techniques (willow revetments) be included in this category? How did you come up with the 12 cubic yard value?	If the project is only for planting vegetation, then yes, it would be included under the General FDP. If the planting is a part of a larger project, then an Individual FDP would likely be required.		4-405.1[C]
44	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	General Permit	When is a grading permit required? Would it be required if you were moving 12 cubic yards of material for gardening purposes?	Grading permits are required for any earthwork over 50 cubic yards. The Boulder County Land Use Department handles these permits.		4-405.1[C]
45	Public	LWOG	7/21/2016	3- General and Individual FDPs	NEW	General Permit- certain maintenance activities	If maintenance activities are not covered under the general permit would we be able to include these activities in our initial project description such that it is included in the individual permit? Maintenance is required for three years following construction thus, I'm wondering if we would have to reapply for a individual permit each year after the permit expiration or if there would be a more streamlined approach.	Most maintenance activities should be covered by the General FDP. If certain maintenance activities are not covered, we recommend that you include them in your Individual FDP application. Depending on the type of maintenance, we may be able to permit it with the overall project permit, or we may require that another permit be issued for the maintenance. It really depends on the type of maintenance work. See maintenance definition, which has been updated.	X	
46	Subject Matter Expert	Don Ash	6/15/2016	3- General and Individual FDPs	NEW	Pre-App Conference	Personally, I don't think that a mandatory pre-application conference is appropriate for this level of permitting. I think for most design professionals, this conference should be "recommended." For instance, we do dozens of septic permits in the floodplain every year that would not require a pre-application conference. I'm not sure how easy this waiver would be obtained from the County Engineer in these situations.	We have not spelled out details of the floodplain Pre-App conference, so there is some flexibility in how they are handled. For Septic, the bottom line is that we want design engineers contacting us to talk floodplain before submitting permit applications. We've added language in order for the pre-app conferences already required by Land Use to qualify as a floodplain pre-app.	X	4-405.2(A)
47	Subject Matter Expert	John Winchester	8/3/2016	3- General and Individual FDPs	NEW	General FDP	If County Engineer does not respond within 14 days, the work is approved': This seems sketchy. What if someone doesn't check their mailbox, can they legitimately claim they weren't notified and so they thought the work was approved? Or someone applies on the day of a major disaster, and the County Engineer is swamped and doesn't respond. The work is automatically approved?	We have removed the automatic approval after 14 days. Most projects will receive a required response through the Land Use review process. This language has been added.	X	
48	Subject Matter Expert	Luke Babbitt	7/18/2016	3- General and Individual FDPs	NEW	General Permit notification	For the General FDP notification, the applicants project description should include discussion on materials to be used and expected impact to channel and floodplain.	We have updated the language to reflect the need for a discussion on the type of materials to be used and the expected impact to the channel and floodplain.	X	4-405.1(B)
49	Subject Matter Expert	Luke Babbitt	7/18/2016	3- General and Individual FDPs	NEW	General Permit- repairs	drainage system and infrastructure repairs (specifically, sediment removal); I'd suggest placing a volume limitation on how much material could be removed. I'd also suggest not allowing the channel invert to be lowered and limiting floodplain sediment removal to a maximum of 6" depth (guess).	We have added language to limit sediment removal to 300 feet upstream and downstream of in-stream structures. Also added restriction from lowering channel invert.	X	4-405.1[C]

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50	Subject Matter Expert	Luke Babbitt	7/18/2016	3- General and Individual FDPs	NEW	General Permit- in-kind replacement	In-kind replacement: I'd suggest moving this to the list that requires 30 days notification. With many of these the opportunity exists to improve in-stream conditions by making slight modifications to the structure configuration/location without adding expense, and with an in-kind replacement. For example, check dams are typically very bad for the creek. However, if someone wants to replace one, I'd recommend they cut a low-flow notch in the crest of the structure. This would help convey low flows and sediment, and wouldn't cost anything extra. This is just one of many examples that could fall in this category.	Agree. We have moved this item to the list that requires notification of the County Engineer.	X	4-405.1[C]
51	Subject Matter Expert	Luke Babbitt	7/18/2016	3- General and Individual FDPs	NEW	General Permit- Debris Removal	Debris Removal: Consisting only of alluvium or woody material. Alluvium – Limited to: -XX CY -Must not result in the removal of vegetation -Must not lower the channel invert -Must not lower the floodplain elevation by more than 6" (this is an estimate) Woody material – debris must be unanchored and not require excavation in the channel and/or floodplain for removal. I'd also suggest that this fall within the 30 day review category, but understand why it's here.	Added parameters for debris removal. This item will remain in the list that does not require notification of the County Engineer.	X	
52	Internal	Ernst Strenge/ POS Staff	8/2/106	4- Flood Protection Measures	BOTH		1. As Jeff Moline/POS mentioned to you in a previous e-mail, the definition of and prohibition of structure in the floodway causes concern (see #1, 2, and 3 on page 7), as it would prohibit the construction of new, permanent non-residential structures in the floodway, such as those for resiliency, public safety, restoration, and irrigation ditch diversion projects. Can you verify whether these would be prohibited under this code amendment?	The 'structure' prohibition is meant for buildings. We've updated the terminology throughout the code to use 'buildings' where necessary. Flood control and other in-stream hydraulic structures are allowed but must meet all permitting requirements for floodway encroachments. Please note that certain buildings constructed for public safety may be considered Critical Facilities as defined by CWCB. Boulder County prohibits new Critical Facilities from being constructed anywhere in the floodplain below 6,000 feet in elevation.	X	4-405(B)
53	Internal	Ernst Strenge/ POS Staff	8/5/2016	4- Flood Protection Measures	NEW	Bridges	1. On page 19, how would BCPOS facilities (e.g. a bridge) be considered under "non-residential structures"? We would like clarification of how these facilities would be handled under the amended code.	The term structures here is in reference to buildings. Bridges are not impacted by these code changes. New bridges would still require certification of No Rise or a CLOMR.		4-408[C]
54	Internal	Jeff Moline/POS	8/2/106	4- Flood Protection Measures	BOTH	Structure terminology/ definition	Code says 'Structures' are prohibited in floodway...including non-residential structures. How does the code accommodate for flood control/restoration/irrigation ditch diversions that are likely to be constructed in floodways?	The 'structure' prohibition is meant for buildings. We've updated the terminology throughout the code to use 'buildings' where necessary. Flood control and other in-stream hydraulic structures are allowed but must meet all permitting requirements for floodway encroachments.	X	4-408
55	Public	Fourmile Coalition	8/8/2016	4- Flood Protection Measures	BOTH		Existing property structures and areas along the creek need to be grandfathered in as they exist now. The re-designation and over-reaching attempts to change current property owners right is effectively a 'taking' property values and can result in an inordinate amount of dollar impact to current residents.	Existing, nonconforming buildings are allowed to continue in their nonconforming state (per 4-416), until a Substantial Improvement is triggered. Substantial Improvement calculations are a minimum NFIP requirement for existing nonconforming buildings. Buildings must be brought into compliance over time to reduce flood impacts to buildings, contents, and homeowners, and therefore reduce flood losses. A building that is brought into compliance with this code will incur less damage than a building that is not in compliance. In addition, flood hazards are constantly changing. Many factors contribute to these changes, included increased development upstream as well as climate factors. The County is required to regulate development that is at risk of flooding.		4-403
56	Public	Fourmile Coalition	8/8/2016	4- Flood Protection Measures	NEW	LPG Tanks	It is stated that propane tanks in the floodplain need to be moved outside of it. Who will provide the funding for this?	Existing tanks do not need to be relocated. They should, however, be anchored. New tanks will not be allowed in the floodplain, unless no other suitable location on the property exists. Under no circumstances may new tanks be placed in the floodway.		4-408(i)
57	Public	July 26 Public Meeting	7/26/2016	4- Flood Protection Measures	BOTH	FPE	What is FPE, what does it mean?	Flood Protection Elevation. For the most part the FPE is unchanged, but we have further-defined it for certain zones.	X	4-408(A)
58	Public	July 26 Public Meeting	7/26/2016	4- Flood Protection Measures	BOTH	Cumulative SI	Substantial Improvements are not cumulative in Boulder County, are they?	Yes, cumulative. There seems to be much interest in this topic currently, even though it's been a requirement for more than 20 years. We do not feel we can properly revisit this requirement this go-around, and it likely warrants its own in-depth discussions.		4-416
59	Public	July 26 Public Meeting	7/26/2016	4- Flood Protection Measures	BOTH	SI & Accesory Structures	Does SI apply to accessory structures?	SI applies to all insurable structures.		4-416
60	Public	July 26 Public Meeting	7/26/2016	4- Flood Protection Measures	BOTH	SI: market values	Do I need to get an appraisal?	This is always the best method, but we can default to county assessor's valuations. We've added language to clarify this procedure in 4-408.	X	4-416
61	Public	July 26 Public Meeting	7/26/2016	4- Flood Protection Measures	NEW	Accessory Structures	Permant sanitary facilities are prohibited...does this include sinks?	We have removed the language prohibiting sanitary facilities.	X	4-408[C](3)(b)
62	Public	July 26 Public Meeting	7/26/2016	4- Flood Protection Measures	NEW	Accessory Structures	Why is the non-conversion agreement necessary? It's redundant.	It is redundant, but we have found that permit conditions and code requirements are not always strictly followed. The nonconversion agreement is an attempt to make it crystal clear. The nonconversion agreement requirement will remain.		4-408[C](3)(f)
63	Public	July 26 Public Meeting	7/26/2016	4- Flood Protection Measures	NEW	Septic	We think that an underground septic will perform better in a flood and not be washed away.	Data from public health shows that, outside of the floodway, elevated systems in the plains performed better. In addition, there already exists an allowance for the replacement of systems in the floodway with underground systems, if certain criteria are met.		4-408(H)
64	Public	LWOG	7/21/2016	4- Flood Protection Measures	BOTH	New construction in floodway prohibited	Does this include Accessory Structures listed in 4-408.C.3 below? If so, then loafing sheds and moveable stock shelters cannot be placed in floodways. That significantly restricts agricultural use of private property.	All new structures are prohibited in floodways. If there is no land available on a parcel outside of the mapped floodway, a variance may be possible. Locations would be subject to further scrutiny by Boulder County to determine the safest possible location within the mapped floodway. Additional flood protection measures may be required.		4-408[C](1)(b)
65	Public	LWOG	7/21/2016	4- Flood Protection Measures	BOTH	Remodeling < \$1,000 and SI	This renovation cost is low and would easily be exceeded in many interior or exterior renovation projects, thereby subjecting the entire structure to complete compliance with this code. It would appear that Substantial Improvement Calculations relate to flood damage repair costs, not routine upgrades, maintenance, and repairs. According to this code, all of these costs above \$1000 will be cumulative and will have detrimental impact on the owner. The cost needs to be higher.	The NFIP requires that ALL improvements count towards a Substantial Improvement calculation. Boulder County has adopted a cumulative improvement policy, requiring the costs of all improvements since 9/11/2013 be included in the calculation (except projects under \$1,000). The goal of this policy, and one of the main goals of the NFIP, is to reduce flood damages. Allowing unlimited improvements to non-compliant flood-prone structures is not sound floodplain management. Conversely, allowing no improvements to flood-prone structures is significantly limiting to homeowners. The Substantial Improvement policy allows for improvements to take place, but requires retrofitting to protect the structure from flood damages once a certain improvement threshold is met.		4-416(B)

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66	Public	LWOG	7/21/2016	4- Flood Protection Measures	BOTH	Non-residential structures in the floodway	If it is a non-residential structure, then non-residential requirements should apply. NOT residential requirements.	Non-residential buildings, per the NFIP and Boulder County, must either be 1) elevated to the FPE (just like residential structures); or 2) dry-floodproofed.		4-416(B)(6)
67	Public	LWOG	7/21/2016	4- Flood Protection Measures	BOTH	EC requirements	Since accessory structures may also be new construction, does a PE need to certify its placement?	If the structure is an insurable structure, then yes, even accessory structures will require completion and submittal of an Elevation Certificate.		
68	Public	LWOG	7/21/2016	4- Flood Protection Measures	NEW	New construction-Accessory structures	Does this also include portable loafing sheds?	We've added a section for new agricultural structures, including loafing sheds. Agricultural structures must still be wet-floodproofed.	X	4-408(C)(3)(b)
69	Public	LWOG	7/21/2016	4- Flood Protection Measures	NEW	New Construction-Accessory Structures	This only refers to basements in flood fringes. Is this the intent here?	Basements are not allowed in any new buildings in the FO District. New buildings in the floodway are prohibited, meaning that the basement prohibition only applies within the Flood Fringe.		4-408(C)(3)(b)
70	Public	LWOG	7/21/2016	4- Flood Protection Measures	NEW	Existing Structures	This section is not clearly written. Are the referenced repairs due to flood damage, or any repairs and/or improvements made to a property regardless of the reason for such improvement?	ANY improvements (including repairs of damage from any source) must be included in the calculation. This is an NFIP minimum requirement. We have re-organized the content of this section, added language to clarify the process- including the calculation that Boulder County uses for SI tracking, and have relocated this content to the Nonconforming Structures and Uses section. Improvements are only tracked for existing nonconforming buildings.	X	4-416
71	Public	LWOG	7/21/2016	4- Flood Protection Measures	NEW	Tanks	It appears existing tanks are excluded.	If existing tanks are damaged and must be replaced, they must meet the code requirements. If existing tanks were placed after the initial adoption of the floodplain code requirements, and they are not anchored, they would be in violation of the code and may be required to be addressed before any other permits can be issued on the property.		4-408(I)
72	Subject Matter Expert	Don Ash	6/15/2016	4- Flood Protection Measures	EXISTING	New construction in floodway prohibited	In my opinion, this provision is particularly onerous and unnecessarily restrictive. I think a more agreeable solution would be to quantify this prohibition with "...unless it can be shown that the proposed improvements will not cause a rise in the 100-year water surface elevation." This would align more with the FEMA floodway requirements. For instance, BRC 1981 9-3-4 states "(e. No person shall carry out any other development that results in any rise in the elevation of the one hundred-year flood." I think this language would be more appropriate.	Improvements to existing structures in the floodway is allowed. This provision applies to construction of new buildings. We have added language to clarify the provision.	X	4-408(C)
73	Subject Matter Expert	Don Ash	6/15/2016	4- Flood Protection Measures	EXISTING	Flood-resistant materials	Service equipment- I acknowledge that FEMA requires that all utility equipment be elevated to the FPE. As you know, the City of Boulder allows elevation to the BFE. Although I understand the benefit of added flood protection, this provision would be somewhat onerous on exterior service equipment. In addition, the ICC requires that electrical service equipment be installed a certain distance above grade. Therefore, there should be some exclusions given to code compliance conflicts.	Where necessary, utilities and service equipment may extend below the FPE and BFE to make proper connections. Where this occurs, flood-resistant materials and system/component protection would be required. Boulder County feels that elevation of new equipment to the FPE is a necessary precaution.		4-408(C)
74	Public	Fourmile Coalition	8/4/2016	6- Review, Appeals, Variances, Enforcement	NEW		Exhibit B: The term "declared local disaster" could use expansion. Specifically, how and when the declared local disaster differs from the recovery period and then which code requirements apply to the disaster period and the recovery period.	There are no floodplain code requirements currently in place that deal with disaster recovery outside of Article 19, which specifically applies to the Fourmile Fire and the September 2013 Flood Event. Local disaster declarations are made by BOCC. The County will consider evaluating possible post disaster floodplain provisions during a future review of the floodplain regulations.		4-410
75	Public	Fourmile Coalition	8/4/2016	6- Review, Appeals, Variances, Enforcement	NEW		Exhibit B: Do emergency activities include private property needs post disaster like constructing/repair an emergency access crossing to a home. If so, this should be more specifically stated. If not, this should be otherwise addressed within the code.	The County will consider evaluating possible post disaster floodplain provisions during a future review of the floodplain regulations.		4-410
76	Public	Fourmile Coalition	8/4/2016	6- Review, Appeals, Variances, Enforcement	NEW		Exhibit B: This line is problematic because the cost of hiring an engineer to determine if "minor disaster recovery" work creates a rise can be prohibitive to private landowners trying to recover from a disaster. One solution may be to contact the County Engineer to see if there is an agreement (between County and landowner) on what the work being considered "minor" is and whether or not it could be temporarily (during disaster recovery) covered by a General FDP. Or, after lessons learned from the 2013 flood, an alternate General FDP list could be developed that lists "minor disaster recovery work" that can be completed without a qualified engineer creating a no rise certification.	The intent of this section (BOCC Review of Approved Permits in the Floodway) is to waive the BOCC review requirement for certain post-disaster projects. Details on permitting requirements and procedures will likely occur outside of the Land Use Code. The County will consider evaluating possible post disaster floodplain provisions during a future review of the floodplain regulations.		4-410
77	Public	Fourmile Coalition	8/4/2016	6- Review, Appeals, Variances, Enforcement	NEW		Exhibit B: This section outlines actions that may be taken in an emergency. This criteria requires emergency actions be hydraulically reviewed by a licensed engineer. In an emergency this criteria is unreasonable and not implementable due to the time and resources required of such analysis.	The County will consider evaluating possible post disaster floodplain provisions during a future review of the floodplain regulations. The intent of this section (Review of Approved Permits in the Floodway) is to waive the notification requirements for certain post-disaster projects. Details on permitting requirements and procedures will likely occur outside of the Land Use Code.		4-410
78	Public	Fourmile Coalition	8/4/2016	6- Review, Appeals, Variances, Enforcement	NEW		Exhibit B: Minor edit: remove the 'and' at the end of the sentence.	Done.	X	4-410
79	Public	Fourmile Coalition	8/4/2016	6- Review, Appeals, Variances, Enforcement	NEW		Exhibit B: Due to the increased potential of flooding after a large wildfire reconstruction can be delayed or otherwise postponed due to subsequent disasters. To benefit those attempting to rebuild after a disaster a five year period with "possible extensions approved by the County Engineer" retains needed flexibility. Limiting it to a "single one year extension" could be detrimental to those already in the building process.	The proposed code has been revised to allow five years to begin the work with a possible one year extension. This will lengthen the period from the previously proposed five year time period to complete the repair work.		4-416
80	Public	July 26 Public Meeting	7/26/2016	6- Review, Appeals, Variances, Enforcement	EXISTING	Violations	How are violations handled? If I want to make an improvement to my house, but my barn has a violation, what's the process?	It is the expectation of the NFIP that all floodplain violations are properly identified and addressed.		
81	Subject Matter Expert	John Winchester	8/3/2016	6- Review, Appeals, Variances, Enforcement	NEW	Disaster Declarations	What does it mean to have a disaster or emergency 'declared' locally?	Local declaration of disasters and emergencies are done formally by BOCC.		
82	Public	LWOG	7/21/2016	7- Definitions	NEW	Definitions/ Acronyms	It would be helpful if you included a list of acronyms in the definitions. "Effective Date" definition references "FEMA" but that definition is missing.	We have attempted to define as many acronyms as is feasible and realistic. Many definitions are borrowed from FEMA and the State, so they are not repeated in this code. At a later date, as we develop additional outreach products for these and other potential code updates, floodplain mapping etc, we can include a list of common acronyms.	X	4-417

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83	Public	Fourmile Coalition	8/4/2016	General Comment	NEW		There are numerous details to code text amendments that substantially impact property owners and communities. Only recently has this information been provided to the public. In the interest of transparency, constructive input from and a greater understanding by impacted communities will require additional time for review of the amendments beyond August 17. Other formats (newsletter, local community forums) may also encourage the goals of more educated and aware communities as well as a transparent process. It would be desirable to have the presence of CWCB and FEMA representatives (as they also significantly drive the process).	We appreciate and share the desire for open public communication; however, Boulder County feels that the majority of these proposed text amendments do not add new requirements for property owners and communities. Many of the requirements are existing, and are being clarified in the proposed text amendments so they are more easily understood. The 1st draft of the proposed floodplain code updates was released for public comment on June 8, 2016. In May of 2016, both FEMA and CWCB reviewed a draft and provided comments. They also received a second draft for review following Planning Commission on August 17. The working sessions held with the watershed coalitions and the public meetings enlightened us to the fact that the public would benefit from additional outreach on new code language.		
84	Public	Fourmile Coalition	8/4/2016	General Comment	NEW		Could there be disaster recovery regulations and non-disaster regulations to simplify process?	This was not part of this code update but will be looked at for potential future floodplain code updates.		
85	Public	Fourmile Coalition	8/4/2016	General Comment	NEW	Existing Structures (damage)	Is rebuilding after a disaster prohibited if the BFE is below 6000 feet?	It depends, but for the most part, no- rebuilding is not prohibited. Was the building completely destroyed? Is the building residential, or is it a critical facility? Residential buildings can be repaired and/or rebuilt following a disaster. If the building is in a dangerous location on the property (such as the Floodway), all efforts must be taken to rebuild the structure in a safer location on the property. If the building is a critical facility, it may be repaired following a disaster, but if it is destroyed and must be rebuilt, it must be located outside of the FO District.		
86	Public	Fourmile Coalition	8/4/2016	General Comment	NEW		A limited review and streamlined to all flood recovery projects needs to be considered. In particular, crossings that are yet replaced create a greater risk in the floodway than the current review process corrects by looking at unrelated structures and land uses. Extending a limited and streamlined review process to those who wish to update their crossing to updated standards would encourage improvements to the efficiency and capacity of the floodway.	The proposed floodplain code text amendments do not address violation enforcement on the property; however, if a particular crossing is a safety concern, Boulder County would likely allow the concern to be addressed before enforcing any action for other violations. A good example is a property where we allowed to owner to stabilize their building foundation before dealing with a violation on their property.		
87	Public	Fourmile Coalition	8/4/2016	General Comment	NEW		How will the proposed code text amendments effect rebuilding after another flood? In other words, how would a future rebuilding experience differ than our current flood recovery experience in relation to the proposed changes?	The only changes proposed in these text amendments that would impact rebuilding after a flood would be for a structure in the floodway that incurs Substantial Damage, or for which repairs would trigger a Substantial Improvement. If the structure is allowed to be re-built in the same location (because relocation is not feasible), then a certain type of design is required. The building would need to be elevated on an open foundation, such as piles or posts, or on extended foundation walls that are open in the direction of flow.		
88	Public	Fourmile Coalition	8/4/2016	General Comment	NEW		Exhibit B: In a post-flood recovery process will FDP permits be issued to replace a damaged or destroyed structure or use that is one of the prohibited uses under the proposed code changes?	Structures that must be rebuilt in the Floodway will be required to meet additional design criteria for foundation types. Also see 4-416 Nonconforming Structures and Uses.		
89	Public	Fourmile Coalition	8/8/2016	General Comment	NEW		There are many people impacted by the new proposed regulations who are on fixed incomes, or lower income by Boulder standards. There needs to be a mechanism and funding in place to assist individuals with \$\$\$ if these regulations impact them. A good example of what can happen is the revised code for septic systems. In many cases this can be a \$30,000 hit to residents who have adequately function systems that don't meet the new criteria.	If a property owner has an adequately-functioning system, they are not required to perform any updates to that system. If they need to replace the system for other reasons, then the replacement system must comply with the requirements. Financial burden is limited as the majority of the expense would be in the replacement system and not in the additional flood protection design requirements. FEMA and other federal organizations manage grant programs available to property owners. Specifically, Increased Cost of Compliance (ICC) assistance can provide up to \$30,000 in assistance when compliance with the floodplain code is required.		
90	Public	Fourmile Coalition	8/8/2016	General Comment	NEW		It is absurd to spell out limitations of items such as barbeques and lawn chairs. These items can be removed easily enough in the incidence of flooding. Will Boulder County need to staff and FUND additional personnel to monitor and evaluate every property owner along the creek? The allocation of public funds could be put to better use!	The proposed floodplain code text amendments make no mention of barbeques or lawn chairs, and Boulder County does not require that the use of a grill or the placement of a lawn chair have a Floodplain Development Permit. The County would, however, require that any fixed lines exiting a building for attachment of a propane grill be elevated to the Flood Protection Elevation, as these lines would be considered service equipment. Code enforcement in Boulder County is both a complaint-based and inspection-based system.		
91	Public	Fourmile Coalition	8/8/2016	General Comment	NEW		Is it true that above 6,000 feet everything is considered to be in the floodplain (or whatever the most restrictive area is called), so that my entire house is covered inside and out?	Above 6,000 feet in elevation, all flood hazard areas are treated as Floodway, unless a study shows that a difference between Floodway and Flood Fringe exists. (See 4-417 Definitions) In the canyons, which are mostly above 6,000 feet, streambeds are much steeper and flood velocities create dangerous flooding conditions. In many cases, flood models cannot determine a difference between Floodway and Flood Fringe areas in the canyons.		
92	Public	Fourmile Coalition	8/8/2016	General Comment	NEW		Do I need a Floodplain Development Permit to repair creek damage back to it's original state?	Yes.		
93	Public	Fourmile Coalition	8/8/2016	General Comment	NEW		Do I have to get a permit to place sand bags? To take other flood prevention measures? To lay flagstone paths? To plant trees, shrubs, flowers, etc.?	Sandbags- Flood Fighting during or in preparation for a flood event does not require a permit. Other flood prevention measures should be discussed with the County Engineer and Land Use Department to determine if permitting is necessary. Flagstone paths as well as planting trees/shrubs/flowers would qualify under the General FDP.		
94	Public	Fourmile Coalition	8/8/2016	General Comment	BOTH	Permit requirements	Supposedly the regs pertain to: 4-401.B. 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." But they are obviously much more intrusive than that. Per FEMA's minimum requirements, changing the existing exemption from FDP for a few categories of minor building permit work to instead be described as repair work necessary for health and safety protection that is covered by the General FDP, the value of which will not be included in a Substantial Improvement calculation. Now that is bureaucratic gibberish, but does it really mean that things that used to be exempt are now covered by the regs so that one has to get a permit?	Per FEMA's minimum requirements, no work in the floodplain is exempt from a permit. This is the reason for the update to the language to clarify that while a permit is still required, the type of work qualifies under a General FDP. We created the General FDP for a few reasons, and a big reason is to decrease the burden on property owners. The General FDP will not be 'issued'. It will be a standing permit on file at the Boulder County Transportation Department. We have made updates to the proposed language such that this minor repair work does not require notification of the County Engineer under the General FDP; however, certain other Land Use Department requirements may apply.		
95	Public	July 26 Public Meeting	7/26/2016	General Comment	EXISTING	Flood insurance vs. code compliance	I pay flood insurance. Isn't that enough? Why must I also meet all these requirements?	There are limits to coverage under the NFIP. Also, it's not just about the money. There are health and safety factors and many other reasons that these regulations exist.		
96	Public	July 26 Public Meeting	7/26/2016	General Comment	NEW	Emergency regs	Maya asked about emergency-specific provisions.	The County will be addressing generalized emergency standards for not only access but all aspects of emergency response and recovery in the future.		

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97	Public	July 26 Public Meeting	7/26/2016	General Comment	NEW	Code details	This revision attempts to add so much detail that it may make things less clear, because you can't possibly cover every development scenario. A how-to or technical guide that dives into specifics, while keeping the code more general, would be the better approach.	We are walking a fine line between not enough and too much content. For future code updates, we welcome examples of where less detail would be good, and can consider outside policy docs that can explain the details and give examples.		
98	Public	LWOG	7/21/2016	General Comment	NEW	Minor repairs exempt from SI calc	Should this be (i) through (vi)?	Yes. Corrected.	X	4-416
99	Public	LWOG	7/21/2016	General Comment	NEW		References 4-___ need to be updated throughout	Agree. With continuous edits, it is difficult to constantly maintain section references. We will update all references prior to submittal to BOCC.	X	
100	Subject Matter Expert	John Winchester	8/3/2016	General Comment	NEW	Text edits		Minor text edits have been incorporated.	X	
101	Public	LLWA	8/17/2016	General Comment	NEW	Outreach	The process for public inclusion in the proposed changes to the floodplain code is insufficient	We appreciate and share the desire for open public communication; however, Boulder County feels that the majority of these proposed text amendments do not add new requirements for property owners and communities. Many of the requirements are existing, and are being clarified in the proposed text amendments so they are more easily understood. The 1st draft of the proposed floodplain code updates was released for public comment on June 8, 2016. In May of 2016, both FEMA and CWCB reviewed a draft and provided comments. They also received a second draft for review following Planning Commission on August 17. The working sessions held with the watershed coalitions and the public meetings enlightened us to the fact that the public would benefit from additional outreach on new code language.		
102	Public	Fourmile Coalition	8/4/2016	None- Comment on Existing content/requirement	EXISTING	FO District	Creating a floodplain overlay district may be premature given that revised floodplain maps are currently in development with CWCB.	The floodplain overlay district already exists. No map changes are being created through these floodplain regulation changes. Rather, a process if being defined for undertaking floodplain overlay district updates.		
103	Public	Fourmile Coalition	8/4/2016	None- Comment on Existing content/requirement	EXISTING		Exhibit A: This section outlines a broad and subjective list of criteria that the county may use to reject a permit. This section needs to be either clarified to eliminate its subjective nature or deleted. For example, item "f" allows rejection of a permit if "the applicant would obtain an undue advantage compared to later applicants who might request a permit." Because it is impossible to know the extent, nature, and scope of future permits this criteria is strictly subjective and open-ended. Also, item "k" allows rejection based on "environmental effect". Nowhere is "effect" defined and again leads to the potential to reject permits based on whim.	This language is taken directly from NFIP regulations and State Rules governing floodplain management, and is meant to satisfy the minimum requirements of the NFIP. It remains unchanged from our existing language in 4-400. It does not establish grounds for rejection or approval; rather, it provides the context under which all projects are reviewed. In addition, we are walking a fine line between not enough and too much content. For future code updates, we welcome examples of where less detail would be good, and can consider outside policy docs that can explain the details and give examples.		4-405.2[C]
104	Public	Fourmile Coalition	8/4/2016	None- Comment on Existing content/requirement	EXISTING		Exhibit A: This criteria is vague and may lead to subjective, inconsistent decision making. For example, "the importance of services to the community" is being made by a board that may or may not be part of that community. The "effect of such damage on the individual owners" should be something the owner is willing to consider and determine rather than a board.	This list of criteria does not establish grounds for rejection or approval; rather, it provides the context under which all projects are reviewed. BOA members must be residents of Boulder County, and must act with the community in mind, including it's residents. All appeals to the BOA will follow the rules established in 2-800.		4-411
105	Public	Fourmile Coalition	8/4/2016	None- Comment on Existing content/requirement	EXISTING		Exhibit B: How are pre-existing uses addressed? Will landowners who have structures or other pre-existing uses in the floodway be forced to come into compliance by eliminating a use if they apply for another unrelated permit. In other words, will the Land Use Review process recommend not issuing an FDP permit if there are existing prohibited uses on the property?	Refer to Section 4-416 Nonconforming Structures and Uses		
106	Public	July 26 Public Meeting	7/26/2016	None- Comment on Existing content/requirement	EXISTING	Septic	How do Floodplain and Public Health interact? Does this interaction need to be codified? Why aren't PH regs in the floodplain code?	Certain aspects of septic permitting are best handled by Public Health; however, they will coordinate with us on floodplain issues, including system siting with respect to floodplain boundaries and flood hazards. This interaction is described in Section 4-402(F)		
107	Public	July 26 Public Meeting	7/26/2016	None- Comment on Existing content/requirement	EXISTING	Boulder County requirements	How and Why do Boulder County requirements differ from City of Boulder, etc? Why did we choose certain requirements over others?	Communities make different decisions regarding appropriate levels of flood protection needed to best protect community health and safety. These decisions occur over long periods of time and are based on a variety of factors including community character and development. NFIP minimum requirements are the same for all participating communities and require a certain minimum level of regulation. Boulder County has adopted certain higher than the minimum standards for floodplain development based on their desire for certain levels of health and safety protection. The County participates in FEMA's Community Rating System program which credits the community, resulting in lower flood insurance rates, for regulations that are higher standards than the minimum requirement. A breakdown of the higher standards adopted by Boulder County that FEMA credits is available in the County's most recent CRS audit materials, available from the Transportation Department.		
108	Public	July 26 Public Meeting	7/26/2016	None- Comment on Existing content/requirement	EXISTING	Interpretation of floodplain	Please clarify the process the County would use for determining flood hazard data if the current maps are incorrect.	In areas where original studies are still regulatory, but digital mapping of those may be incorrect, we'll go back to the original study. The County can also use water surface elevations and new contour data to make determinations. Sometimes, we must require that property owners contact FEMA about incorrect boundaries.		
109	Public	July 26 Public Meeting	7/26/2016	None- Comment on Existing content/requirement	EXISTING	Floodplain vs. LU for home elevation	If you have to elevate a house for floodplain requirements, and LU has height restrictions, you will be significantly limited with what you can achieve.	True. Buildings in the FO district must adhere to the floodplain code requirements as well as the remainder of the Land Use Code requirements for it's underlying zoning as well as any other overlay zoning districts. A house that is being elevated where elevation of the existing structure (addition of foundation) is causing a conflict with the height restrictions would likely apply for a variance to the height restriction.		
110	Public	July 26 Public Meeting	7/26/2016	None- Comment on Existing content/requirement	EXISTING	SI	Why is SI linked to dollars if it's goal is to keep things out of the floodplain?	FEMA has acknowledged a fine balance between not allowing ANY improvements in the floodplain and the need for homeowners to make necessary repairs and improvements. Tracking \$ spent is the way FEMA has chosen to determine when compliance must be triggered.		
111	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Alteration of a watercourse	Why does this not also apply to bridges? Many county bridges clearly decrease conveyance and flood carrying capacity.	All new county bridges are designed in accordance with the Boulder County Storm Drainage Criteria Manual with freeboard above the 100-year event, so loss of conveyance is minimized. All bridges are designed to minimize or eliminate impacts to insurable structures in compliance with Article 4-400.		4-405.2[E]
112	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Fence Requirements	This needs to be researched so that the many white horse fences, mesh fences, and barbed wire fences are not in violation.	As long as the Boulder County fence requirements are met (see Land Use Flyer), fences will be in compliance. The County has limited capacity to search for violations of the fence requirements, but will react to complaints of non-compliance.		4-405(B)

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113	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING		Such as a BRIDGE!	True. All encroachments must not cause a rise, unless applicant applies for and receives a CLOMR.		4-405(B)
114	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING		It appears that bridges are no longer allowed in Floodways as was the case in the existing code. This change is good in that many bridges in the County adversely affect the efficiency of the Floodway, change the direction of flow, increase base flood heights, and pose a significant safety hazard.	While the overall goal has been, and will continue to be to encourage development that results in no impact to 100-year water surface elevations, bridges have always been allowed in floodways. They will be permitted if they 1) do not cause a rise in the 100-year water surface elevation; or 2) have received conditional approval from FEMA (CLOMR). Design requirements for bridges are dependent upon roadway classification. See the Boulder County Storm Drainage Criteria Manual for more information on these design requirements.		4-405(C)
115	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Storage of materials above FPE	So, these items can be stored above the flood level inside a structure that meets this code, as allowed in 4-407.C.8.	If a structure is outside of the floodway, storage of materials can and must happen above the FPE. In the floodway, storage of these materials is prohibited.		4-408(B)
116	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	New construction-General Requirements	Who determines what methods and practices minimize flood damage? Provide a code reference.	This is standard language from the NFIP. The idea is that we should all be thinking about and considering these methods and practices...from architect to engineer to builder.		4-408(C)
117	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	dry floodproofing of non-residential structures	Why this extreme requirement only for Commercial Structures? Shouldn't this be subject to the use of the structure whether it needs to be impervious to water rather than a blanket restriction to all commercial structures?	The NFIP has determined that dry floodproofing (making walls impervious to water, etc) is acceptable for structures that are not considered residential structures. It is not a requirement; rather, it is an option to elevating the entire structure to the FPE.		4-408(C)(3)
118	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Existing Structures	What is a Substantial Improvement Calculation? No definition exists in Article 18 or this Article. Who checks for Substantial Improvements? How is this check performed? Who is responsible for maintaining Substantial Improvement records?	SI is defined; however the calculation may not be provided. We have added the calculation. Land Use and the Floodplain Team check for Substantial Improvements. Improvement percentages are tracked by the Floodplain Team for each building in the county.	X	4-416
119	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Minor repairs exempt from SI calc	I see no mention of structural repairs in this section. To what does this refer?	Agree. Changed language to 'repairs to buildings and service equipment' as opposed to 'structural repairs'.	X	4-416
120	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Minor repairs exempt from SI calc	How are these violations determined? Where do they come from? Are these repairs only to be reported if a violation has been identified? Or, are all such activities to be reported?	The intent of this section was also to address repairs to restore function to essential service equipment/systems, and not only to handle equipment/systems that may be in violation of codes. The language has been updated.	X	4-416
121	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Minor repairs exempt from SI calc	However, it appears they must be permitted and reported to the County Engineer as stated in pp. a. above.	Yes, improvements/repairs that qualify under this section should be routed through the County Engineer for confirmation that they 1) will not be included in a Substantial Improvement calculation; and 2) will be covered by the General FDP.		4-416
122	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Minor repairs exempt from SI calc	According to pp. 1 above, this would include any improvement work done including caulking windows, cleaning a furnace, changing a light bulb, etc., all of which require a permit. Improvements are not defined other than in Article 18 which has little or nothing to do with this section.	It's possible that the 'Improvement' definition in Article 18 will need to be revisited at a later time. To clarify the intent of this paragraph: Any work that does not qualify under this section, when a permit is applied for, will count towards a Substantial Improvement calculation.		4-416
123	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	SI calcs	What is the purpose of this calculation?	A cumulative Substantial Improvement calculation determines a threshold at which an entire structure must be brought into compliance with the flood protection measures of this code. The cost of each project will be measured against the market value of the structure at the time of the project, and a percentage will be determined. Once the total of all percentages reach 50, compliance is triggered. For clarity and transparency, the calculation has been added to the code language.	X	4-416
124	Public	LWOG	7/21/2016	None- Comment on Existing content/requirement	EXISTING	Definition	And yet, bridges have been proven to be an encroachment that restricts the discharge of the base flood and significantly increases the water surface elevation.	True, bridges can restrict flow and impact water surface elevations; however, Boulder County bridge design requirements in the Storm Drainage Criteria Manual exist to limit these impacts. The floodway definition defines how a floodway is established by FEMA and in Boulder County. Encroachments are allowed under certain circumstances (see 407B).		4-417
125	Internal	Ernst Streng/ POS Staff	8/5/2016	None- Topic for Future Consideration	BOTH	Stream Restoration	Could there be a simplified process for stream restoration projects that utilize natural channel design, either under the General Permit or the Individual Permit processes? We understand the need to regulate these projects if they are creating major changes within a Floodplain Overlay District (i.e. the need to meet conveyance and flood carrying capacity requirements). However, many stream restoration projects only have minor impacts (e.g. minor bank stabilization or habitat improvements). Could these be included under the list of "Uses and Activities Eligible for a General FDP"? This may require some guidelines about what constitutes a "minor" project.	At this time we cannot implement such a process for stream restoration projects. We are in discussions with FEMA and the State about reduced requirements for these projects, but if reductions are implemented, we would likely still require an Individual FDP. Currently, maintenance activities associated with stream restoration projects are proposed to be covered by the General FDP.		
126	Public	Fourmile Coalition	8/8/2016	None- Topic for Future Consideration	BOTH		It appears that if your furnace or hot water heater is in your basement, you cannot replace it or repair it without a general permit	Replacement of these items is covered by the General FDP. We created the General FDP for a few reasons, and a big reason is to decrease the burden on property owners. The General FDP will not be 'issued'. It will be a standing permit on file at the Boulder County Transportation Department. We have updated the language in the General FDP section such that notification of the County Engineer is not required for this type of work. Other Land Use Department requirements may still apply.	X	
127	Public	Fourmile Coalition	8/4/2016	None- Topic for Future Consideration	EXISTING		Exhibit B: What are Substantial Improvement Calculations? Are they related to quantifying damage post-flood? If so, a section that is specifically related to construction/development in a post disaster setting may be more easily followed and/or referenced by the public.	A cumulative Substantial Improvement calculation determines a threshold at which an entire structure must be brought into compliance with the flood protection measures of this code. The cost of each project will be measured against the market value of the structure at the time of the project, and a percentage will be determined. Once the total of all percentages reach 50, compliance is triggered. For clarity and transparency, the calculation has been added to the code language. The County will consider evaluating possible post disaster floodplain provisions during a future review of the floodplain regulations.	X	4-416
128	Public	July 26 Public Meeting	7/26/2016	None- Topic for Future Consideration	EXISTING	SI	There should be a distinction between flood recovery work and maintenance for SI.	FEMA requires that all improvements are considered in SI calcs, so if we are tracking cumulatively, we need to consider all improvements as well. We do, however, have certain exemptions in place for certain repairs to and replacement of service systems and equipment such as furnaces, electrical, and HVAC.		
129	Public	LWOG	7/21/2016	None- Topic for Future Consideration	EXISTING	SI calcs	Why cumulative? Were improvements prior to this date cumulative? What is the purpose of cumulative improvement calculations?	Yes, Improvements prior to 9/11/2013 were cumulative, but we started the clock over following the flood. Tracking cumulative improvements towards SI is an additional layer of managing floodplain development that Boulder County has already adopted.		4-416

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130	Public	LWOG	7/21/2016	None- Topic for Future Consideration	EXISTING	SI calcs	It appears that any work a property owner does on their structures (including those low cost items listed above) need to be reported to the County Engineer, added up (unless exempted above), and when those costs reach a certain limit, the entire structure needs to be brought into compliance. This is a major change in the code since in the past compliance wasn't required unless repair/upgrade costs for ONE project exceeded a certain limit. Now, this appears to cumulative beginning 9/11/2013. I can only assume that the County's goal is to slowly bring all structures in the FO into compliance with this code at the cost of the property owner. While this supports the goal of protecting the public, at the same time it creates a significant financial burden on the public.	The cumulative tracking of Substantial Improvements as a floodplain standard was evaluated in Spring 2014 leading to the resetting of the baseline date at a BOCC hearing on May 29, 2014. This concept is not being changed with this code amendment.		4-416
131	Public	LLWA	8/17/2016	None- Topic for Future Consideration	NEW	Disaster declarations	The proposed code fails to take into account the complexity of a flood event	The County will consider evaluating possible post disaster floodplain provisions during a future review of the floodplain regulations.		
132	Public	LWOG	7/21/2016	None- Topic for Future Consideration	EXISTING	SI calcs	This paragraph is what may represent potentially significant cost to property owners. If Base Floodplain Elevations are raised, then anyone doing work on their building structure that was previously in compliance may need to be upgraded to meet these new construction standards. Costs to property owners may be excessive and prohibitive, forcing them to sell out. Is this the County's goal?	The County's goal is to protect the public's investments from flooding. Home values in Boulder County are higher than ever, yet flood insurance coverage caps at \$250,000. Flood losses to an individual structure could certainly exceed the coverage amount. Regulating to a revised (higher) BFE will ultimately result in less flood damage. What's more, if BFEs are raised, and a structure becomes non-compliant, then that structure could be subject to higher insurance premiums based on the new BFE. Tracking improvements against the new (higher) BFE will ultimately lead to lower insurance premiums. Be aware that revised BFEs may also decrease in certain situations, which would afford relief to some homeowners.		4-416