

**CITY OF BOULDER
CITY COUNCIL AGENDA ITEM**

MEETING DATE: September 20, 2011

AGENDA TITLE:

Introduction, first reading and consideration of a motion to order published by title only, an ordinance amending Chapter 9-3 “Overlay Districts” and Section 9-16-1 “Definitions.” B.R.C. 1981 to amend floodplain regulations in order to protect critical facilities and mobile populations in the 500- and 100-year floodplains.

PRESENTER/S:

Jane S. Brautigam, City Manager
Paul J. Fetherston, Deputy City Manager
Maureen Rait, Executive Director of Public Works
Ned Williams, Director of Public Works for Utilities
Bob Harberg, Utilities Planning and Project Management Coordinator
Annie Noble, Greenways Coordinator
Christie Coleman, Engineering Project Manager

EXECUTIVE SUMMARY

Recent and historical flood events have demonstrated that flood damage to certain critical and mobile population facilities can significantly delay and increase the costs of flood recovery or increase the life safety risk associated with flooding. By requiring protection of these facilities in the 500-year floodplain, local governments can enhance economic and social sustainability and decrease risks of deaths or injuries from flooding. Critical facilities are buildings that house essential services, at-risk populations and hazardous materials and include hospitals, schools, buildings containing hazardous materials and fire stations. Mobile populations are groups of people who may not be familiar with the flood threat to the area they occupy, which include hotels, restaurants, theaters and dormitories.

The purpose of this item is for the City Council to consider adopting a proposed ordinance (**Attachment A**) to revise the floodplain regulations under chapter 9-3 “Overlay Districts” and section 9-16-1 “Definitions” of the B.R.C. 1981.

The following lists the proposed changes to the floodplain regulations:

1. Implement flood protection of critical land uses in the 500-year floodplain. [Section 9-3-2 through 9-3-7] (**see Attachment B – Floodplain Map**),
2. Implement emergency management plans for critical facilities and mobile populations in the 500- and 100-year floodplains. [Section 9-3-2- through 9-3-7]
3. Implement subsurface (groundwater) flooding protection for areas removed from the floodplain by placement of fill dirt as required by the Colorado Water Conservation Board’s update, established on Nov. 17, 2010, to “Rules and

Regulations for Regulatory Floodplains in Colorado”. [Section 9-3-3(a)17(C)]

Implementation of the proposed ordinance has been structured to allow existing facilities to continue current operations until they request modifications through floodplain and building permits or, for the development of emergency management plans and containment of hazardous materials, the expiration of a 10 year implementation window. The combination of allowing existing critical facilities and mobile population facilities to continue operations unless they proposed modifications or the expiration of the 10 year implementation window is intended to provide time for facilities to research best management options and secure funding for emergency management plans or containment of hazardous materials.

Staff has worked with affected property owners and other stakeholders to provide flexibility in implementing the ordinance provisions. Significant flood mitigation benefits will be achieved over time as private and city-owned facilities are constructed or make improvements. The State of Colorado does not require flood protection of critical facilities in the 500-year floodplain for its entities, such as the University of Colorado or the Boulder Valley School District, but encourages local governments to regulate critical facilities in the 500-year floodplain. Federal government agencies that are constructing facilities are directed to either avoid the 500-year floodplain or protect federal facilities to the 500-year water surface level.

The city is working to ensure that ample public outreach has been and will be conducted throughout the development of this ordinance. Outreach activities, since the Planning Board meeting on Aug. 4, 2011, have included mailings and electronic notifications to members of the public, outreach to the Boulder Chamber and Local Emergency Planning Committee, and continued coordination with impacted facility owners to incorporate comments on the ordinance where appropriate. Additional detail on the project’s public outreach is provided in **Attachment C**.

STAFF RECOMMENDATION

Suggested Motion Language:

Staff requests council consideration of this matter and action in the form of the following motion:

Motion to order published by title only, an ordinance amending Chapter 9-3 “Overlay Districts” and Section 9-16-1 “Definitions.” B.R.C. 1981 to amend floodplain regulations in order to protect critical facilities and mobile populations in the 500- and 100-year floodplains.

COMMUNITY SUSTAINABILITY ASSESSMENTS AND IMPACTS

- Economic: Protection of critical facilities located in the 500-year floodplain will enable these facilities to avoid flood damage and return to pre-flood business operations more quickly.

- Environmental: Protection of hazardous material facilities located in the 500-year floodplain will reduce environmental contamination often associated with floods.
- Social: Protection of critical facilities containing hazardous materials or providing essential services will reduce damage caused by flooding and assist in providing continuity in business operations for facilities that are critical to the community's health and safety. This will increase the community's ability to respond to flood and post-flood issues. Protection of critical facilities providing housing to at-risk populations will reduce the life safety risk to people who may not be able to adequately respond to a flood event and associated evacuation. The development of emergency management plans for facilities catering to mobile populations will reduce the life safety risk to people who may not be familiar with Boulder's unique flood hazards.

OTHER IMPACTS

- Fiscal: A cost analysis report has been prepared and is presented in **Attachment D**. Average costs of compliance were analyzed for the development of emergency management plans and protection of critical facilities. Costs of compliance for emergency management plan development and permitting are expected to range from \$3,000 to \$12,600 with the average cost of different plan types being \$6,200. Costs of compliance for critical facilities protection (building elevation or floodproofing and permitting) are expected to range between \$1.50 per square foot and \$76 per square foot with an average cost of \$11 per square foot.
- Staff time: Approximately three percent of properties in the 500- and 100-year floodplains will be classified as critical or mobile population facilities. An estimated 60 hours per year of staff time will be required to determine if land development activates meet the critical facilities and mobile population definition. Up to 14 new floodplain development permits per year are expected in the 500-year floodplain. The properties associated with these permits will be subject to review fees and cost recovery in a manner consistent with existing 100-year floodplain permits. Increases of up to nine new floodplain development permits per year are expected in the 100-year floodplain. The time associated with implementing and communicating about the ordinance and permits will be covered using existing resources.

BOARD AND COMMISSION FEEDBACK

The Water Resources Advisory Board (WRAB) reviewed and provided input on the proposed ordinance at its Jan. 20, 2011, and March 28, 2011, meetings. During the Jan. 20 meeting, staff received feedback from WRAB members and members of the public. Most comments focused on public outreach and the development of the economic analysis. Staff response and additional research related to this feedback is included in **Attachment C**. WRAB voted 5-0 to recommend approval of the ordinance at its March 28 meeting.

The Planning Board reviewed the proposed ordinance at its Aug. 4, 2011, meeting. At this meeting, public comment focused on continued public outreach to facilitate business community review and input on the ordinance. The Planning Board directed staff to continue working with potentially impacted facilities to receive comments on the ordinance. The board then approved the ordinance in a 6-0 vote.

To address outreach concerns raised by the public at the Planning Board meeting, postcards were sent to potentially impacted facilities, and the Local Emergency Planning Committee and Boulder Chamber were notified of upcoming City Council meetings. In addition, the project website was updated to provide information on the remaining meetings and an E-News message was sent to several pertinent city listservs. Staff has also met with representatives of Roche Colorado Corporation and has incorporated many, but not all, of their comments into the proposed ordinance.

PUBLIC FEEDBACK

An Aug. 24, 2010 open house was held to inform the public of the proposed ordinance and the initial three proposed management strategies. Approximately 25 members of the public attended this meeting. Most comments focused on understanding the proposed management options and providing feedback on which option provided the best solution for the city. A summary of questions and answers from the critical facilities and mobile populations' open house is provided as **Attachment C**.

Since the Aug. 24 open house, staff has continued to engage stakeholders through a variety of methods including email, a presentation to the Boulder Chamber's Community Affairs Council in October 2010 and a February 2011 spot on "Controversy and Consensus" that aired on Channel 8.

BACKGROUND

Recent and historical flood events have demonstrated that flood damage to certain critical and mobile population facilities can significantly delay and increase the costs of flood recovery or increase the life safety risk associated with flooding. By requiring protection of these facilities in the 500-year floodplain, local governments can enhance economic and social sustainability and decrease risks of deaths or injuries from flooding.

In 1995 the City of Fort Collins implemented regulations on development of critical facilities in the 500-year floodplain. Recent Fort Collins updates to floodplain mapping and associated rainfall data which resulted from mapping irregularities identified after the 1997 Spring Creek Flood have resulted in a 500-year floodplain only being mapped for the Poudre River.

The City of Boulder is the number one flash flood risk community in the Front Range. As such, the city must be prepared to provide continued operations of critical facilities and protection to mobile populations.

- Critical facilities are classified as buildings that house essential services, at-risk populations and hazardous materials. Examples include hospitals, schools,

buildings containing hazardous materials and fire stations.

- Mobile populations are groups of people who may not be familiar with the flood threat to the area they currently occupy; examples include hotels, restaurants, theaters and dormitories.

As part of addressing this need, City Council endorsed the development of protection measures, and the city's 2004 Comprehensive Flood and Stormwater Master Plan and 2011 Multi-Hazard Mitigation Plan call for identification and protection of critical facilities located in the city's 500- and 100-year floodplains. The proposed ordinance will require protection of facilities that are critical to life safety and social or economic recovery during and after a flood. The proposed ordinance will also implement new flood protection measures required by the Colorado Water Conservation Board's update, established on Nov. 17, 2010, to "Rules and Regulations for Regulatory Floodplains in Colorado."

The proposed ordinance will expand the regulation of mobile populations and the critical facility categories of essential service, at-risk population and hazardous materials facilities to areas encompassed by the 500-year floodplain. In the 500-year floodplain:

- Substantial improvements or modifications to, or development of, new at-risk population and essential service facilities will be constructed so that the lowest floor of the entire building is protected to the level of the 500-year flood elevation plus one foot. Smaller building additions will also protect the new construction to that level.
- Existing hazardous materials buildings with modifications requiring a floodplain development permit or a building permit which exceeds 25 percent of the market value of the existing structure are required to secure the hazardous material from flooding within a 10 year implementation window. New hazardous material facilities would be required to secure the hazardous materials from flooding as a condition of the permit.
- In the 500- and 100-year floodplains, emergency management plans will be required for:
 - 1) Critical facilities and mobile population facilities requiring building permits for new construction, development requiring a floodplain development permit, the addition of any floor area, or any building permit for a substantial improvement and must be developed as a condition of the permit.
 - 2) All other existing critical facility and mobile population facilities will be required to develop emergency management plans within a 10 year implementation window from the ordinance adoption.

Emergency management plans will include either shelter in place or evacuation plans. The most appropriate method of protection will be defined, and evacuation routes or sheltering locations will be posted in the building, similar to requirements for fire response. This requirement will ensure that necessary flood education and protection information is available during times of flooding.

Critical facilities and mobile population facilities will continue to be regulated within the area encompassed by the 100-year floodplain, consistent with other types of buildings, with the exception of the requirement to develop an emergency management plan. Existing 100-year regulations will remain in place and a revision of the definition of hazardous materials is included in the recommended ordinance. Existing critical and mobile population facilities can continue to operate in their current capacity.

Recent updates to the ordinance are outlined in **Attachment E**.

ANALYSIS

Current regulations do not define or acknowledge the unique needs of critical facilities or mobile populations with respect to flood hazards. The proposed ordinance provides a definition of critical facilities that are integral to promoting life safety or are critical to emergency operations during or after a flood. The ordinance proposes to require protection of critical facilities not only within the 100-year floodplain (current regulations) but also within the 500-year floodplain. In the 500- and 100-year floodplains, the proposed ordinance requires the development of emergency management plans that will identify and inform critical facility occupants of an appropriate flood response.

The proposed ordinance also provides a definition of buildings that serve mobile populations (example uses include hotels, restaurants, and theaters). These populations are most likely to be unfamiliar with Boulder's flood danger or characteristics during times of flooding. In the 500- and 100-year floodplains, the proposed ordinance requires the development of emergency management plans that will identify and inform mobile population building occupants of an appropriate flood response.

The State of Colorado Department of Natural Resources Colorado Water Conservation Board (CWCB) updated its "Rules and Regulations for Regulatory Floodplains in Colorado" on Nov. 17, 2010. Most of the new provisions in this regulation promote, at a state-wide level, floodplain regulations that are already in place in the City of Boulder. However, the new CWCB regulation closes an existing loophole where land that was subject to surface and subsurface (groundwater) flooding could be removed from the floodplain by placement of fill dirt and then developed without subsurface flood protection measures. In order to meet the requirements of the CWCB, the city's floodplain ordinance will be updated to require subsurface flood protection in areas removed from the floodplain by the placement of fill dirt.

The content of the proposed ordinance is based on direction from the National Flood Insurance Program's (NFIP) Community Rating System (CRS). The NFIP's CRS provides guidance on floodplain regulations designed to reduce flood damage to existing buildings and protect new buildings beyond the minimum requirements of the NFIP. At a general level, the CRS recommends the protection of critical facilities to a 500-year level to reduce damage to those facilities that, in turn, will improve a local government's ability to respond to the needs of the community during a disaster. The CRS also outlines

management strategies for protecting critical facilities. Based on the CRS's guidance and input from the public, the WRAB and Planning Board, local facility managers, the Local Emergency Planning Committee and the Boulder Chamber, the proposed ordinance was developed.

Care has been taken to ensure that public outreach has been completed as part of the development of the Critical Facilities and Mobile Populations ordinance. Outreach started with solicitation for input on critical facilities definitions and management strategies and has continued with education and outreach efforts to insure that impacted facility managers are aware of and can comment on the proposed ordinance. As part of this process, feedback, comments and suggested edits on the ordinance have been received by the city. Major elements of the project outreach have included two meetings with the Local Emergency Planning Committee, two meetings with the Boulder Chamber, a front page newspaper article in the *Camera*, phone calls to hazardous materials facility managers, a spot on "Controversy and Consensus" that was aired on Channel 8, an open house and public hearings. Additional detail on this outreach is provided in **Attachment C**.

Implementation of the proposed ordinance has been structured to allow existing facilities to continue current operations until they request modifications through floodplain and building permits or, for the development of emergency management plans and containment of hazardous materials, the expiration of a 10 year implementation window. The combination of allowing existing critical facilities and mobile population facilities to continue operations unless they propose modifications or the expiration of the 10 year implementation window is intended to provide time for facilities to research best management options and secure funding for emergency management plans or containment of hazardous materials.

Staff has worked with affected property owners and other stakeholders to provide flexibility in implementing the ordinance provisions. Significant flood mitigation benefits will be achieved over time as private and city-owned facilities are constructed or make improvements, as described above. The State of Colorado does not require flood protection of critical facilities in the 500-year floodplain for its entities, such as the University of Colorado or the Boulder Valley School District, but encourages local governments to regulate critical facilities in the 500-year floodplain. Federal government agencies that are constructing facilities are directed to either avoid the 500-year floodplain or protect federal facilities to the 500-year water surface level.

Up to 14 new floodplain development permits per year are expected in the 500-year floodplain and up to nine new floodplain development permits per year are expected in the 100-year floodplain.

MATRIX OF OPTIONS:

City Council options for review and consideration include:

- Adopt the proposed ordinance.
- Propose modifications to the ordinance. A matrix that represents alternative options that were developed from feedback of facility managers, members of the public and staff members is presented in **Attachment F**.
- Request additional public involvement, information or evaluation on the proposed ordinance.

Next Steps:

The Second Reading and public hearing on these floodplain regulation changes is scheduled for council consideration on Oct. 4, 2011.

ATTACHMENTS

A: Proposed Ordinance

B: Floodplain Map

C: WRAB and Open House feedback with staff response

D: Cost Analysis

E: Recent updates to the proposed ordinance

F: Matrix of Options