

**CITY OF BOULDER  
WATER RESOURCES ADVISORY BOARD  
AGENDA ITEM**

**MEETING DATE: March 18, 2019**

**AGENDA TITLE:** Information Item – Update on the Upper Goose Creek and Twomile Canyon Creek Flood Mitigation Study and Alpine-Balsam Area Plan Coordination

**PRESENTERS:**

Jeff Arthur, Director of Public Works for Utilities  
Douglas Sullivan, Utilities Principal Engineer  
Katie Knapp, Engineering Project Manager  
Jean Gatza, Senior Planner

**EXECUTIVE SUMMARY**

This memorandum provides background information and an update on the Upper Goose and Twomile Canyon Creek Flood Mitigation Study and associated coordination efforts with the Alpine-Balsam Area Plan. Based on community feedback and technical screening several alternatives were added and others removed from further consideration.

Next steps include additional alternatives assessment using the evaluation criteria developed for the Skunk Creek, Bluebell Canyon Creek and King’s Gulch Flood Mitigation Study; field assessments of the existing creek channels; and consultation with potentially impacted property-owners and residents informing recommendations for draft mitigation plans. This memorandum is intended to be informational and does not require WRAB action.

**BOARD AND COMMISSION FEEDBACK**

The Upper Goose Creek and Twomile Canyon Creek Flood Mitigation Study was presented to WRAB on March 19, 2018, following a public open house. The study has not been presented to any other boards or commissions, however, because one of the alternatives under consideration is a new detention facility at North Boulder Park, City Council, Planning Board and the Parks and Recreation Advisory Board have been made aware of this planning effort and the potential park impacts.

As part of the Alpine-Balsam Area Planning process, policy choices for flood mitigation in North Boulder Park and on the Alpine-Balsam site were shared with the community, Planning Board and [City Council in fall 2018](#). Feedback from the Planning Board and City Council indicated support for flood mitigation detention both at North Boulder Park and on site to decrease flows on site and increase developable space, while preserving trees, current uses, and the character of the park.

## **PUBLIC FEEDBACK**

The Upper Goose Creek and Twomile Canyon Creek Flood Mitigation Study has included several opportunities for the public to provide feedback on the flood mitigation study. The following table summarizes the public process to date:

<b>Date</b>	<b>Meeting</b>
Oct. 24, 2013	Post-Flood Open House
April 12, 2017	City-wide Flood Open House
July 13, 2017	Flood Mitigation Workshop
March 19, 2018	Flood Mitigation Open House and WRAB Public Meeting
March 18, 2019	Update to WRAB

The March 19, 2018, open house was held to present information on several different mitigation alternatives. On that same day, the alternatives were also presented to the Water Resources Advisory Board (WRAB). Comments were received through email and an on-line questionnaire was also developed to capture public feedback. Over 200 emails and over 450 responses to the online questionnaire were received. The questionnaire was organized by sections of the drainageway (or ‘reaches’) to inform respondents of downstream impacts and encourage site specific feedback. The complete results of the questionnaire can be seen at this link:

[https://data.surveygizmo.com/r/349531\\_5acb842cd95904.61712895](https://data.surveygizmo.com/r/349531_5acb842cd95904.61712895).

For Twomile Canyon Creek reaches, favored alternatives included ‘no action’ and alternatives that would direct floodwaters east on Iris Avenue to discharge into Elmer’s Twomile Canyon Creek. For Goose Creek, the questionnaire feedback favored detention at North Boulder Park and 100-year containment within storm drains upstream of 19<sup>th</sup> Street. Downstream of 19<sup>th</sup> Street, channel improvement alternatives were generally not preferred.

In addition, over 800 individual comments were received through the questionnaire. Many of the comments related to 100-year flood containment both in favor of and against, though most responses expressed concern about private property impacts from 100-year flood containment. Comments from Reach 1, the most upstream area of Twomile Canyon Creek, included suggestions for new alternatives not included on the questionnaire. There were also several comments suggesting that the city perform creek assessments to better understand the condition of the existing creek channels and maintenance needs.

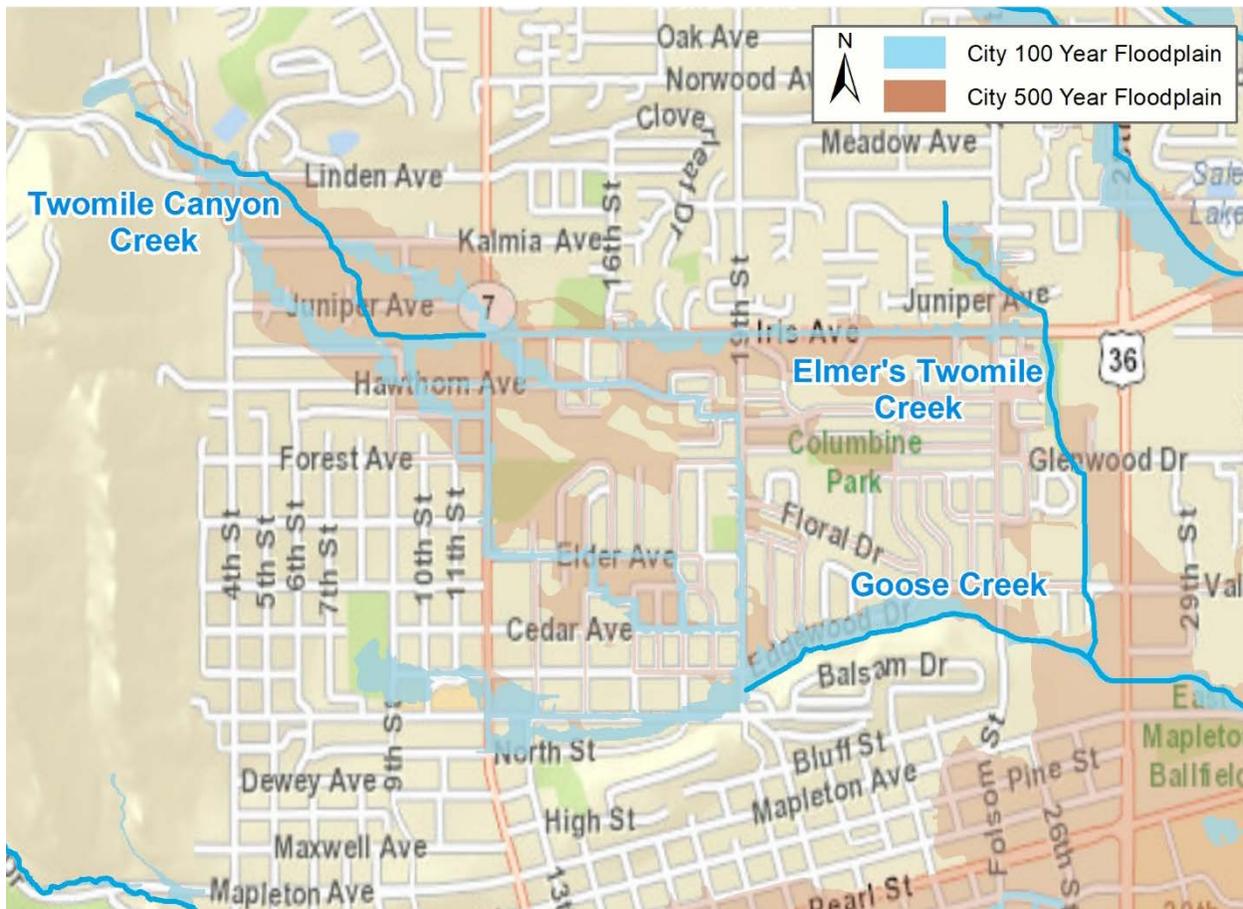
Utilities staff have also met with individuals and small neighborhood groups to share information and receive feedback about the study. A compilation of public comments is included in **Attachment A**.

Property owners and residents in the study area have been notified of public meetings using post cards, emails, social media (Nextdoor) and the project webpage:

<https://bouldercolorado.gov/pages/skunk-creek-bluebell-canyon-creek-kings-gulch-upper-goose-and-twomile-flood-mitigation-studies>).

## **BACKGROUND**

This study is for the Upper Goose Creek and Twomile Canyon Creek drainageways. The floodplain map for this area is depicted below:



**Upper Goose Creek and Twomile Canyon Creek Floodplain Map**

The floodplain maps for Upper Goose Creek and Twomile Canyon Creek were updated in 2015 and incorporated improvements and changes along the drainageways.

For this flood mitigation study, the city retained ICON Engineering, Inc. (ICON) to develop and evaluate several flood mitigation alternatives which included:

1. Detention Facilities
2. Sediment Capture Facilities
3. Channel and Culvert Improvements
4. Piped Storm System Improvements
5. Roadway Conveyance

These alternatives were presented to the public and the WRAB for feedback in March of 2018. Additional background information about the study area, flood history and the initial alternatives under consideration was included in the March 19, 2018 WRAB memo and is available at this link: <https://bouldercolorado.gov/links/fetch/39460>

## **ANALYSIS**

Community feedback on the initial flood mitigation alternatives has helped shape the study process and revisions have been made to the alternatives being evaluated. New alternatives were added to the analysis and an initial screening process was completed to eliminate alternatives that were determined to be unfeasible or would not be acceptable to the community.

An Alternative Selection Memorandum (**Attachment B**) was completed by ICON to summarize the initial public process, development of alternatives and initial alternatives screening. As described in the memo, the following additional alternatives were added to the evaluation:

1. Alternate detention facility sites for Twomile Canyon Creek, including areas west of the city limits.
2. Roadway conveyance for Twomile Canyon Creek, west of Broadway.

The flood mitigation alternatives were then reviewed through an initial screening with the following results:

1. Alternatives that would impact Long's Garden's have been removed from further consideration.
2. Alternatives that would require the removal of the Alpine Condominiums have been removed from further consideration.
3. 100-year channel alternatives that would require a significant removal of houses were removed from further consideration.
4. Detention facilities for Twomile Canyon Creek, upstream of Broadway were determined to not be feasible and were removed from further consideration.
5. Open channel alternatives that would require removal of existing commercial structures were removed from further consideration.

### Alpine-Balsam

The city-owned Boulder Community Hospital site is along the upper reach of Goose Creek and is currently in an area planning process known as the [Alpine-Balsam Area Plan](#). Utilities staff

have been coordinating with this project team and Parks and Recreation staff on alternatives to reduce flooding risks in conjunction with redevelopment of this area. One alternative includes altering a portion of the North Boulder Park to accommodate flood detention. Consideration of park detention was informed by the baseline assumptions of respecting existing tree canopy and preserving usability of ball fields with flexibility of an open lawn area.

City Council, Planning Board and the Parks and Recreation Advisory Board are aware that a detention facility at North Boulder Park is under consideration and could result in potential impacts and will require additional analysis, design, and community process. Both City Council and the Planning Board expressed support for investigating this option further to decrease flows on site and increase developable space, while preserving trees, current uses, and the character of the park. To further understand the feasibility of this option, a geotechnical investigation is being completed and groundwater monitoring wells were installed collect groundwater data. Additional analysis is currently underway on the detention in the park, conveyance channel locations and design considerations related to daylighting goose creek. If this alternative advances, additional public engagement would be planned to gather community input from park users and the Parks and Recreation Advisory Board to help guide changes to the park.

### **NEXT STEPS**

The alternatives will undergo additional assessment using the evaluation criteria developed for the Skunk Creek, Bluebell Canyon Creek and King's Gulch Flood Mitigation Study. This criteria was developed with input from the WRAB on August 20, 2018:

- Life Safety (includes protecting vulnerable populations and providing emergency response capability)
- Property Damage Mitigation
- Water Quality Enhancement
- Habitat Protection and Restoration
- Operation/Maintenance Costs
- Protection of Cultural Resources
- Recreation Opportunities
- Alternative Transportation Routes
- City Construction Costs (including benefit to cost ratio)
- Public Opinion/Community Acceptance
- Resiliency/Adaptability to Climate Change and Uncertainty
- Ability to Implement Quickly

City staff will also conduct field assessments of the existing creek channels to obtain a more accurate understanding of the current conditions of these creeks and maintenance needs. Staff members will access the creeks on properties where there are existing flood and drainage

easements and will be reaching out to property owners for a right-of-entry where needed. The field assessments will include:

- Taking notes and photos of the flood channel and any associated structures such as bridges, pipes, fences, etc.;
- Gathering survey information; and
- Noting any observed hazards such as fallen trees, sediment build-up, trash or severely eroded channel banks.

Once draft recommendations are developed, staff will work with potentially impacted property owners to refine the recommendations prior to presenting the draft mitigation plan to WRAB at a future meeting. Following a WRAB recommendation to approve the mitigation plan, it will be presented to City Council for acceptance.

Once accepted, the flood mitigation plan will be a long-range planning tool to help guide future flood mitigation projects for Upper Goose Creek and Twomile Canyon Creek. Projects identified within the plan will need to be prioritized against the city's other flood mitigation needs.

## **ATTACHMENTS**

Attachment A: Public Comment Summary

Attachment B: Alternative Selection Memorandum (ICON)