



Floodplain Management Program Open House

Date: 04.12.2017

Meeting Location: Boulder High School

Number of Attendees: 29+ (Note: not all attendees signed-in)

Staff in Attendance: Katie Knapp, Christin Shepherd, Kurt Bauer, Laurel Olsen-Horen, Joanna Bloom, Annie Noble, Doug Dunn, Edward Stafford, Alysha Geiger, MaryAnn Nason, Candice Owen, Ryan Martin

Others in Attendance: Brooke Seymour (Urban Drainage and Flood Control District), Craig Jacobson (ICON Engineering), Brian Ledoux (ICON Engineering)

Purpose of Meeting:

Community members were provided with city-wide flood planning and mitigation information. This public open house was also the official “kick-off” the flood mitigation planning process and provided the public an opportunity to discuss problem areas and provide ideas for consideration.

A website was developed to provide information and updates on the mitigation study:
<https://bouldercolorado.gov/pages/skunk-creek-bluebell-canyon-creek-kings-gulch-upper-goose-and-twomile-flood-mitigation-studies>

An interactive map was also developed to allow people to submit comments and suggestions:

<https://iconengineering.github.io/maps/boulder/flood-mitigation-comments/>

Comments Received:

None of the written comments received pertained to the Upper Goose or Twomile Canyon Creek areas.



Upper Goose and Twomile Canyon Creek Flood Mitigation Workshop

Date: 07.20.2017

Meeting Location: North Boulder Recreation Center

Number of Attendees: 22

Staff in Attendance: Katie Knapp, Christin Shepherd, Kurt Bauer, Laurel Olsen-Horen, Doug Dunn, Robby Glenn

Others in Attendance: Brooke Seymour (Urban Drainage and Flood Control District), Craig Jacobson (ICON Engineering), Brian Ledoux (ICON Engineering)

Purpose of Meeting:

City staff hosted a flood mitigation workshop with residents within the Upper Goose and Twomile Canyon Creek watersheds. A presentation was given that highlighted the development and flood history for Twomile Canyon and Goose Creek and described several different mitigation strategies that could be considered. Table top discussions were arranged and facilitated by city and UDFCD staff to brainstorm options, evaluate priorities, and capture the residents' preferred flood mitigation strategies.

Comments Received:

Exercise 1: Current Drainage Conditions

During storm events, what is currently working well?

- Helping push the water runoff downhill (south.)
- Downstream (28th St.) the mitigation has cleared up & opened up the 2-mile drainage which clears pretty easily.
- Most storm drains.
- Existing creek has sufficient capacity & more since the flood/storm event.
- Creek handles stormwater well.
- In 2013, the area where mitigation efforts were made really helped. The city can take further judicious action to mitigate floods.
- Hard to assess since we have had smaller storm events.
 - Is North Boulder Park intended as a flood collection area or is this just an outcome?
- Except for 2013, seems to generally work ok.
- Not so much in my area.
- Ecological processes, low impact development, green infrastructure, wetlands, healthy riparian areas.
- No surface water on our property.

- Water flowed down 19th into sewers.
- Only surface water in lower areas in crawlspace.
- Floodwaters followed the 2D mapping (mostly.)
- Broadway drainage Iris → Elder.

What is not currently working well with storm drainage?

- Too much water doesn't run off fast enough (when ground is soaked.)
- Old drainages clogged with trees & brush.
- Unimproved streetscapes.
- Unanticipated storm/sanitary interconnect.
- Culverts under Linden, Kalmia, Juniper, Broadway are undersized.
- Broadway & Iris, Linden & @ Mile – underpass with pedestrian path & flood control would be brilliant.
- Flooding even with light rain at south end of North Boulder Park.
- Sump pumps in neighbor houses constantly pump into alleyway.
- Not drainage with 17" of rain in 3 days.
 - You might encourage people to keep their own storm drains clear of stuff - if you only check some of these once a year – for their own benefit.
- Iris & Broadway culvert not working well.
- Sewer backup issues.
- Water backs up at 4th & Linden and comes down the bike path – turning that into a river. A larger culvert along Two-Mile Creek at Wonderland might help.
- 2013 water came across Ideal parking into our underground parking – no change for this!
- Culvert at Iris and Broadway is blocked by a lot of big debris – causing a pond with standing water → mosquito breeding. Also worried about people doing their own mitigation causing issues for neighbors in the next flood. Needs to be done on a citywide basis.
- Impervious pavement, low floor to area ratios especially for commercial development. Big parking lots, encroachment on streams & wetlands.
- Some water flowed down Floral.
- Culvert at Iris & Broadway is not cleaned out this standing water during the flood shot up two stories at intersection on west side.

Exercise 2: Rank Study Objectives

- Vulnerable population (schools, nursing homes, etc.)
 - Yes to residential uses. Not to public (part time) uses.
- Protection of cultural resources.
 - Open space at Linden should be left as is! Kalmia should not be torn up!
- Life safety (high hazard) mitigation.
 - Reduce high hazard by placing culvert from hospital BCH east.
 - Protecting life and limb is most important along with
- Recreation opportunities
 - Free the floodplains.

- Operation and maintenance cost savings
 - Increase water rates slightly to mitigate damage.
 - Be effective but spend what is necessary.
- Minimize City construction costs.
 - This huge project is overkill!
 - Reduce damage potential.
- Habitat protection and restoration.
 - Do not disrupt our lives with a huge project for an unlikely future event!
 - Wetlands & riparian areas, fluvial geomorphology.

Exercise 3: Rate Flood Mitigation Strategies

- What is your opinion of each mitigation strategy?
 - Detention and/or Sediment Capture Facility
 - Slow the damage before it reaches population.
 - Open Channel and Culvert Improvements
 - I like a combination of these two (plus underground piped storm drainage system) based on initial cost AND cost of maintenance for clearing both during storm event.
 - Roadway Conveyance
 - See a danger to an unwilling populace.
 - Already happens.
 - Detention and/or sediment capture facility; open channel and culvert improvements; and underground piped storm drainage system convey more water, expensive.
- *Comments on mitigation strategies:*
 - We need to contain sediment, so it does not plug storm system.
 - Take advantage of demolition at hospital when the development happens. Use different solutions to mitigate as much flooding as possible – open culvert where available.
 - Street drainage.
 - Box culvert.
 - Make as many improvements as financially possible.
 - Kalmia being rebuilt into a sunken culvert would be unacceptable to Kalmia residents & other neighbors.
 - Combination: Larger culverts under Linden, Kalmia, Juniper, Broadway. Focus flooding on roads/storm drains. Pedestrian underpass under Broadway.
 - For 2-Mile, all strategies must be employed. Detention at Linden & Lake Briar, open channel improvements to Broadway & Iris, underground drainage to Iris & 16th, roadway conveyance from Iris to Elmers.
 - I am both confident in the city and consultancy to solve the problem and willing to do all in my power to support.

- Suggest open channel from Foothills Elementary, under Broadway, along north of Iris at county buildings, past ballpark, then go underground on Iris as roadway conveyance, would also include bike/pedestrian.
 - Should layer these and use as most appropriate.
 - Would immediately increase detention/sediment capture facilities.
 - Open channel on Alpine!
 - Detention ponds have to be really big – how practical?
 - 2-mile Creek need to be utilized – see below. *
 - Restoring ecological processes, wetlands, healthy riparian areas goes a long way with multiple benefits at lower costs.
 - Open conveyance sounds best but land is not available.
 - Combination makes sense. Open channels could be deeper.
 - Roadway conveyance makes sense in many locations.
 - Researched other cities should carry a great deal of influence.
 - Does it have to be “one size fits all?” or can we use different strategies for different neighborhoods?
- *What are the biggest challenges you can identify for drainage improvements in your neighborhood?*
 - The biggest challenge is to not overdo it. concentrate on preventing blockages in existing system. Our neighborhood is already besieged by construction. A huge “mitigation” project will be very unwelcome.
 - No improvement necessary on property.
 - Convincing the community to take the necessary integrated approach. Open channel → culvert → roadway. For 2-mile, all will be required.
 - New construction – depth of foundation/basements.
 - Changes in individual property impact community solution.
 - Sprinkler systems.
 - I bought all new gutters & extension for downspouts.
 - Biggest challenge is trying to mitigate the flow down 4th St. along the bike path between Linden & Kalmia. The roadway conveyance map (the green lines) would make things worse. It seems like the main diversion should be down Linden, not 4th St. & Kalmia.
 - Parking lots west of us will always make us vulnerable.
 - With the redevelopment of the old hospital, there is a real chance to bring back Goose Creek west of Broadway. This was extremely popular at the redevelopment workshop favoring more natural drainage patterns.
 - Existing housing.
 - Access to land to build open channels.
 - Please pick the one which will have the greatest impact on the current floodplain map. Without understand how each strategy might change the map, our opinions are out of context.
 - Broadway higher than most property east of it.
 - *Flood Mitigation Workshop Feedback:*

- I look forward to seeing the proposals.
- The individual table conversations worked well to get people warmed up to the topic, but it seemed most productive when the entire group (one at a time) spoke with a presenter so everyone could hear and respond to each idea or concern.
- One suggestion: opening statement really underscoring opinion and wishes of stakeholders is the goal. A very few people questioned the goal. It's clear you care what we think.
- Our staff (#2) – Robby Glenn was helpful & clear.
- More information on cost estimates & budget for doing reality check/
- Next phase – invite same people, provide 2-3 options (by area) & ask for input then.
- Briefness of many slides.
- Assistance to questions.
- *I was a little surprised at the format. It's time for key people to have opinions, but I was expecting a little more concrete/scientific information about the city's plans and thoughts about the various mitigation options. It seems to me that certain options are more appropriate than others in certain situations and I would leave that up to the experts as long as something is done.
- Well done!
- There was enough time for people to ask questions and give comments.
- With only a small bit of information, you are asking us to rank various options. I fear you will overvalue this input. I think we have to trust expertise and experience over (potentially) uninformed opinion. I know public input is important – but opinions passed on only surface understanding of the complexity of issues is dangerous.



Upper Goose and Twomile Canyon Creek Flood Mitigation Open House

Date: 03.19.2018

Meeting Location: City of Boulder | Municipal Services Center

Number of Attendees: 61+ (Note: not all attendees signed-in)

Staff in Attendance: Katie Knapp, Christin Shepherd, Robby Glenn, Laurel Olsen-Horen, Joanna Bloom, Ward Baucher, MaryAnn Nason

Others in Attendance: Jim Watt (Urban Drainage and Flood Control District), Craig Jacobson (ICON Engineering), Wyatt Reis (ICON Engineering)

Purpose of Meeting:

City staff hosted a flood mitigation open house prior to the regularly scheduled Water Resources Advisory Board (WRAB) meeting to present information on several different mitigation alternatives. The open house format was laid out in an arc, with different reaches of the mitigation study at different tables. Other information stations included irrigation ditches, and general flood information.

Open House attendees were encouraged to provide feedback using an online questionnaire.

Comments Received:

Comments were received from 477 individuals through an on-line questionnaire. The results of the questionnaire can be seen at this link:

https://data.surveymzmo.com/r/349531_5acb842cd95904.61712895

Comments were also received by email summary of emails

After the open house, the alternatives were presented to the WRAB and members of the community were provided an opportunity to speak to the WRAB.

Water Resources Advisory Board Public Comments:

- Troubled by lack of notification to his neighborhood of the earlier meetings. The options presented are missing some solutions he would like to see. It seems like piping solutions in his neighborhood have gone by the wayside. He would like to see it as a principle of this process that taking someone's home or process is a last resort.

- Has lived on Broadway between Hawthorne and Iris for 28 years. Has come to know and value the Long family as good friends and neighbors. Pleased to see that the idea of converting the productive agricultural center into a swamp is off the table. If a detention area is needed, look at the possibility of installing a cistern under all or some of the property north of Iris and east of Broadway. Should be able to construct a cistern and still utilize the surface. Recommends using Broadway as a runoff channel. It already serves that purpose. Same for Iris. Use it to dissipate the impact of the water into shallow flooding.
- Has lived on Iris court for 37 years where the current channel goes into Farmers Ditch. The map is in error on this location. It is a couple of hundred yards to the east. Doing nothing is not an option. There was a lot of damage in 2013. Sediment from the runoff filled Farmers ditch completely. It was costly to dredge. Piping is a better option.
- Lives near Mr. Guesman. Shares many of the same ideas on reach number 3. Echoes the comments that trying to have Farmers Ditch accept this kind of flow is not acceptable. A ditch is to channel water in a controlled flow. Uncontrolled flow is just diverting the problem to a different area. Such as his neighborhood.
- Neighbor of Rick Brew. Echoes Rick Brews sentiment about the proposed channels going through his property. Also very concerned that the decision to turn away from pursuing pipe solutions around Kalmia/ Iris was based on only a small sample size. Echoes sentiments around not taking private properties. It would be nice to solve other utility problems as well. Looking at the 100-year flood plain mapping, there may be unintended consequences from changing the flows.
- Lives on Juniper where it backs up on Twomile behind Foothills school. At some point, we need a clarification on where the money comes from for these projects. Encourages improving and maintaining the 25-year channel. Enlarge the culverts all the way up and work on maintaining a 25-year floodplain. This would probably mitigate many problems. If the city is doing more, still do less than the 100-year channel and maintain it. Stop the paving of pervious land in this area. There is too much paving in new development in the area, which makes flooding worse. If the widening of Twomile is adopted, she urges adoption of the Broadway underpass. Plenty of room for a channel. Foothills will lose most of their playground if the open channel option is adopted.
- Appreciative that option D is coming off the list. There are still many options that create a very destructive effect on their property. Understands that it is the responsibility of staff and the board to consider all options. But their property is not “undeveloped” though it is sometimes perceived that way. It takes many years to develop the soil and it can’t just be moved around and put back without dire consequences. The soil has been conditioned and developed for more than 100 years. Any option, including “do nothing”, is still a risk to their soil and the soil community. If a house is damaged during an event, even when a family is compensated, they still lose their home. Although they are private property, their land is very public. There is no similar plot of land in the city that could be purchased to serve the same functions, Help preserve land and the soil to benefit the community into the future.

- Executive Director of Growing Gardens. Leases 11 acres of land from the Longs and serves the community with education about agriculture. Agrees with Catherine Long Gates. Pleased that alternative D is off the table. Option B, with a culvert across the property, would also have negative impacts to the soil and would be toxic to sustainable agriculture. Her organization is in favor of Option A.
- Alpine Condo resident. She and her neighbors did have a big clog at their property during the 2013 flood, and a lot of crawl space was impacted. She therefore has a property interest, but she would like to think about the problem more systemically than she currently has the information to do. If we could intervene sooner, maybe mitigation would be better. Who would the city have to collaborate with on the reaches higher in the watershed, outside City limits? What happens to North Boulder park? She is willing to consider intervention there that helps what goes on further downstream. Willing to sacrifice if it makes things better for the whole community.
- Speaking as someone who has grown up in the Twomile creek drainage and continues to live there. Not trying to push one alternative over another but does think that we need a much clearer process outlined for how options are chosen or eliminated. Thinks street conveyances are viable but does not see them on the map of options tonight. Were these eliminated? Please make a very clear process for evaluation of alternatives and their elimination. Because a large portion of the drainage is in the county, it would be inappropriate for the City to not consider County features and issues, such as Pinebrook Reservoir, when planning mitigation.
- Lives on Jonquil place. Has paid for a number of flood studies and LOMAs for his property. For the most part, the 100-year flood stayed within the ditch in the studies. It does not stay within the ditch anymore. He did not receive notification of the meeting or the open house. Neighbors let each other know it was happening. There is a 20-foot easement that runs along and maintains Twomile creek in everyone's back yards. Years ago, crews would come down the creek every year and clear the channel. That ended in 1992. City staff told them that equipment used to clear the creek had been sold, and that the obligation would be on the property owners going forward. Property owners have been doing this for 20 years. If the City is concerned about safety, why are they no longer maintaining the creek? Urges the city to perform maintenance and maybe enlarge the culverts.
- Lives on Iris, in the elbow of the creek. Has lived there for 32 years. Has never had any problems, because right behind his house is a berm. During 2013 floods, no water came in his yard from that direction. But he did get water from overflow upstream, which came in as sheet wash, flooding his basement and causing \$65,000 worth of damage. Agrees with Mr. Bundy regarding lack of maintenance of the creek. Culvert at Broadway is always filled with junk at the overflow. Because there is an easement on both sides of the creek, building a small berm along this could be an inexpensive way to mitigate issues in this area. While much of the conversation is around the 100-year flood, the 2013 event was more than that. We should prepare for larger floods. Proponent of open channel with berms and regular maintenance. Upstream area outside of City limits should be a major priority. The \$170 million to spend over the next 100 years, seems like a trifle amount to spend on the effort.

There should be more money available. Foothill Elementary is downhill from my property, but the floodplain map goes around the school. There should be consideration for areas that do flood.

- 15th street, north of Elder. Is a hydrologist who has lived in the area for about 20 years. "Me too" on road conveyance. There is too little consideration of these options in the plan as presented. Where we see it on Iris is a great idea, but there are more opportunities for this. It is inexpensive. City already owns the land. Resists clogging. Allows for dispersed movement of water. Improve safety by preventing clogging of a single channel. Many options for the flow mean less flooding overall. Look at it again and look at it harder.
- 17th Street. Open ditch under the power lines would be hugely invasive to her property. 100-year plan would be huge cut through property. In favor of using streets as conveyance. How about offering flood insurance to the people in these conveyances? Private insurance does not cover well. Notify all people in these areas specifically for their feedback as they are the ones most impacted. Why can't we work with the County on upstream reaches? Take a vote in this room and see how we feel about these options.
- Lives on Juniper. Concerned that notices did not get out to enough people. There needs to be a second opportunity for public input, as this first provided only limited information. There is a lot of interest and much depends on it. There is a lack of clarity. He cannot get a consistent definition of 100 and 500-year flood plains and plans from city staff at the open house. What is the correlation between a rainfall event and the floodplain? Is there a discussion about defending our utilities in a flood event through mitigation? Defending properties is one thing, but should we be also protecting important utilities so we're not without water, power, etc. during these situations. Alternate routes should be looked at in the grey areas. Seems like something needs to be looked at there, for implementation now. Concerned that widened areas through private properties might become public areas. This is not clear in the plans. Second John Gerstle and Craig Bundy.
- Loraine Court further down Twomile. Property has been in the family a long time. Further down the Twomile, (closer to the confluence) there were flooded crawlspaces. For her, digging a 100-year channel through the property to mitigate the flooded crawlspace does not jibe. What would the long-term effects of that be? Old trees might be removed. Power line that goes through people's property along Floral should be considered in plan.
- Edgewood Drive. Supporting all those who talked about maintaining what we have so that it works most efficiently. When he walks down the goose creek path, there are concrete culverts with gates that can be closed. Ever since the 2013 floods, there are always several inches of sediment. If mitigation infrastructure is not maintained, it will not work. There's no way to get in the culvert to clean them unless they use a big pump truck. Drains just don't work anymore. Water backs up into own property. After an event, there needs to be easy access to clean it out. This should be considered during construction. Inexpensive, easy access maintenance.



Upper Goose Creek Informal Neighborhood Meeting

Date: 03.23.2018

Location: 2242 Edgewood

Number of Attendees: 8

City staff present: Katie Knapp, Christin Shepherd, and Laurel Olsen-Horen

Meeting Purpose:

Residents along Edgewood Drive reached out to city staff to invite us into their neighborhood to observe the current state of Goose Creek south of Edgewood Drive and discuss different flood mitigation alternatives under consideration. Staff also walked the creek area with the Edgewood residents who described the different wildlife and activities they see along the creek.

Summary of Comments:

Current uses of Goose Creek include, but are not limited to:

- Wildlife sanctuary for bears, foxes, coyotes, deer, beaver, racoon, water fowl, heron, owls and other birds of prey, etc.;
- Outdoor education for the nearby Unity Church School; and,
- Wooded and grassy oasis in the heart of an otherwise urbanized neighborhood

The attendees also shared with staff some of their concerns should the area be impacted by any flood mitigation project. These included:

- Loss of wildlife habitat.
- “engineered channel” – residents are not in favor of a concrete channel and prefer the natural look of the current waterway.
- Loss of privacy if any of the existing trees (larger ones) were removed.
- Residents are not in favor of any public access trail or road.
- Should any of the large trees need to be removed, residents do not want female cottonwoods replanted.
- Residents are not in favor of any new diversions of storm water into the channel from other problem areas.

City staff discussed additional observations and concerns about the existing creek channel with the neighbors:

- The south bank of the channel is very steep and eroded in some areas. The erosion of the embankment could be contributing to the sediment found in the creek downstream.
- Existing fences along the north bank of the creek may be in jeopardy from continued erosion.
- There is a lot of woody debris piled along the north side of the creek which could cause a potential hazard to the flows in the creek.
- Access for creek maintenance is difficult or non-existent.
- The existing piped storm drain system does not function as it should because the outfall pipes that drain to the creek are filled with sediment and buried in some locations.
- There were several dead racoons in the creek.
- There are people camping near the creek.
- A bicycle bump track is being constructed along the north bank of the channel, although nobody was seen working on it during our site visit.



Twomile Canyon Creek Informal Neighborhood Meeting

Date: 04.03.2018

Location: 6th & Kalmia

Number of Attendees: 12+/-

City staff present: Katie Knapp, Christin Shepherd, and Laurel Olsen-Horen

Meeting Purpose:

Residents within the Kalmia/Juniper neighborhood area organized a walking meeting with city staff to discuss the flood mitigation study and the different mitigation alternatives under consideration. Attendees participated in a neighborhood walk that began at 6th and Kalmia and included several sections of Twomile Canyon Creek between Linden and Broadway.

Summary of Comments:

Meeting participants shared with staff concerns with some of the flood mitigation alternatives under consideration and the current state of the creek. These included:

- Widening the existing creek channel would require significant impacts to private property.
- The existing creek channel is not being properly maintained.
- Undersized culverts need to be replaced.
- Some property owners do not want to grant easements to the city for flood mitigation.



Upper Goose Creek Ideal Market and Community Plaza Meeting

Date: 02.05.2019

Location: Brenton Building

City staff present: Katie Knapp, Jean Gatza, and Laurel Olsen-Horen

Ideal and Community Plaza representatives present: David Carter, Henry Beer, and Steve Leblang* (*Steve has been Planning's primary contact for this group)

Meeting Purpose:

City staff met with three of the nine property owners of the Ideal Market and Community Plaza buildings to update them on the city's process for the area plan with a focus on land use and flood mitigation.

Summary of Comments:

The plaza representatives would like to ensure uncertainty in the development of a future area plan is finessed as much as possible. They also shared their observations of perception with regards to the flood mitigation detention option in North Boulder Park is misunderstood by many in the community. It is believed the detention is thought to have a result of a constant lake rather than a temporary storage facility of stormwater during weather events where the park would not be in use anyway. Additional comments included:

- They have contracted with Danica Powell to help understand redevelopment issues
- The area east of Broadway would not favor an open channel
- Future land use opportunities for the buildings could possibly include residential and/or senior living facilities
- BC2 Zone – be mindful of the unintended consequences of this zoning (i.e. business tenant turnover)
- Recommended staff provide the community with renderings of the park to help reduce the misunderstanding of the city's intended purpose of stormwater detention
- Suggested the city look into the landscape architect works of Jim Burnett (Houston, TX) with regards to creating a more “amenity” feeling of the park to the surrounding neighborhood (i.e. Klyde Warren Park [Dallas, TX], Playa Vista Park [L.A., CA], and Southern Gateway Deck Park [Dallas, TX])
- Interest in creating a parking district – plaza is in dire need for employee parking