

From: [Pearen, Keith L](#)
To: [Knapp, Katie](#)
Subject: Gregory Canyon Alternatives Analysis
Date: Tuesday, October 21, 2014 3:12:20 PM

Katie,

First, great job last night. Well thought out presentation. I think your line of thinking on how to go about this project is spot on! I think your approach to get the WRAB involved early and often is great. Totally agree that it is not feasible to upgrade all for 100yr flows and a 10yr approach is reasonable.

My impression, the culvert widths with 10yr flow and 20% blockage are still large (14' to 20') relative to the stream bed (12' max) and Sept '13 demonstrated need.

I had a few more thoughts after listening to the full discussion last night:

First, Is it possible to update the % blockage for some of the existing structures (Table 5 and 'Improvements in Public Right of Way' Table) that performed adequately in the Sept '13 flood? It makes little sense to prioritize those structures that performed well in Sept '13. If we revise the Blockage % down from 50% to 20% or 0% can they (Aurora, College, Pleasant, University, 8th, Marine, Arapahoe) be shown to accommodate the 10 year flow? If we can show them by analysis to be good for 10yr, then perhaps money can be focused elsewhere.

Second, it makes sense to Utilize a phased approach to Gregory Creek Improvements:

- Phase 0: Obtain easements that are necessary for Phase 1 improvements
 - Obtain easements for:
 - Private Drive at Old Baseline
 - Private Drive at NW Corner of Willowbrook Cul-de-sac
 - Drive to School North of Arapahoe
 - Have easements obtained prior to WRAB reconvene – Project is a non-starter without them

- Phase 1: High Need improvements in public right of way and in easements obtained in Phase 0
 - Focus on structures that are unable to convey 10yr flow and experienced issues during the Sept '13 event
 - Private Drive at Old Baseline
 - Willowbrook improvements (culvert and regrade)
 - Euclid Culvert
 - Pennsylvania Road Removal (Pedestrian Bridge)
 - 7th Avenue
 - Drive to School North of Arapahoe

- The following were all OK during Sept'13 (Aurora, College, Pleasant, University, 8th, Marine, Arapahoe)
- Phase 2: Street Conveyance Measures
 - Implement proposed street conveyance measures
 - Willowbrook street mods and new pipe
 - 6th street from Euclid down (or Rosehill to 7th as shown in the mini-master, but this makes less sense because of flow combination with 7th at Anderson Ditch) Either way, Euclid should be identified as a creek to surface street transition. This is not shown in the CH2M report and should be added.
 - 7th street from Anderson Ditch down
 - 8th street from Pleasant down (Questionable cost/benefit with numerous major changes)
- Phase 3: Debris traps, Channel Enhancements, Property Acquisition and Re-mapping
 - Obtain easements for channel enhancements in areas that will not convey 10yr flow
 - Install debris traps
 - Bank stabilization
 - Property acquisition for High Hazard Properties
 - Re-Mapping

Thanks,
Keith

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From: [Keith Pearen](#)
To: [Knapp, Katie](#)
Subject: Re: Gregory Alternatives
Date: Thursday, October 09, 2014 2:27:32 PM

Katie,

Thanks again for keeping us in the loops as this process progresses. I had a chance to read the report and have some comments in addition to your comment on the proposed removal of Pennsylvania Ave culvert (thanks!):

1. Page 1, Paragraph 1: Gregory creek is identified as a "left bank" tributary of Boulder Creek. Should be right or south. These things are assigned looking downstream.
2. Table 3: the location of "1/3 of discharge at Aurora Ave, with 2/3 placed on the local highpoint" makes no sense.
3. Table 3: Should confluence with Boulder creek be included in this table (2092 cfs with 100 yr return interval)?
4. Table 3: Consider a more readable format with location in the first column and return intervals of 2, 5, 10, 50 and 100 as columns 2 - 6.
5. Page 3, Hydraulics Section: Mixed tense and "deliverable for the this analysis." makes no sense.
6. General: LOMR is never defined.
7. Table 8: Good list of potential improvements. No indication that they were evaluated at any point in this report. Are some recommended? All?
8. Page 7: "Channel Geometry between Euclid and College is unable to convey the 10 – year storm event without causing infrastructure damage." Really? Haven't seen a model, but this seems like one of the larger channel sections. Surprising Conclusion! This is not consistent with Sept '13 observations.
9. Figures 5 - 7: Red, green, and blue boxes mean? CH2M Recommendations?
10. Figures 5 - 8: Potential improvements listed in Table 8 are largely ignored. If not included, why not? Were they evaluated?
11. Figure 5: "Install a 23' x 6' box culvert" under 7th street near flagstaff Elementary is inconsistent with physical geometry of site. Existing culvert is at least 100' in length.
12. Figures 6 and 7: Please remove the improvements that were already proposed in Figure 5 (Option 1) from these figures.
13. Figure 6: "5-ft channel bottom 4.5-ft depth 2H: 1V side slopes" proposed between Euclid and College already exists.
14. Table 2a and 2b: Map needed to correlate river stations used in the tabular data.
15. Table 2c and 2d: Discussion of the "Lateral Weir" seems to be missing entirely from text. These tables are never referenced in text.
16. Table 10: Is it possible to prioritize these Culvert Improvements or determine an order of operation in which these are to be done so the least capacity conveyance is always highest priority?

I know it is an initial draft, but I would expect a little better from CH2M (I used to work for them)...

Thanks again for keeping us in the loop,

Keith

On Wed, Oct 8, 2014 at 4:36 PM, Knapp, Katie <KnappK@bouldercolorado.gov> wrote:

Hi Keith,

There is a link to a “very” draft alternatives analysis on the upper right corner of the project website. I have already provided the engineering consultant with a list of comments, so this will be revised prior to the meeting. One of my comments was to include the pedestrian bridge option, which they do not currently show. Please feel free to provide comments at any time or at the meeting.

Katie

From: Keith Pearen [REDACTED]
Sent: Friday, October 03, 2014 12:24 PM
To: Knapp, Katie
Subject: Gregory Alternatives

Katie,

Is there something that shows the potential alternatives for Gregory Creek that we can see prior to the meeting on Oct 20th? I checked the website and it has been updated to show the Oct. 20th meeting, but didn't see any new proposed alternative.

Thanks,

Keith

From: [Jose-Luis Jimenez](#)
To: [Knapp, Katie](#)
Cc: [REDACTED]
Subject: Re: Gregory Creek questions
Date: Tuesday, October 07, 2014 7:26:16 AM

And hello once more,

A followup on the issues I brought up. Yesterday I went into the creek bed with a measuring tape and estimated the cross section of the creek in a couple of sections before and after the culvert to be replaced by us:

- The proposed culvert is 120 sq ft (6' x 20')
- The creek upstream of the culvert is ~25 sq ft up to the rim
- The creek downstream of the culvert is ~50 sq ft up to the rim (later there is a spot where it is smaller before getting to Arapahoe)

So this relates to the question I asked yesterday: the "alternatives" document doesn't mention any work on the bed of the creek in this area (it does in at least one place much farther upstream). But it would seem to me that massive work (including removal of trees, serious enlargement of the channel) would definitely be needed for the whole creek bed between Marine and the alley, possibly also downstream of the alley. Otherwise the culverts would seem far oversized for the much smaller flows that the channel would be able to carry. As I said the owner of the creek bed between Marine and the alley seems extremely unlikely to want to invest on such a costly project.

So in this context: has the city decided that it is not even going to consider such needs in their "big picture" planning? Or would that come in a later phase? (but that would seem unwise to me).

Regards,
-Jose

On Mon, Oct 6, 2014 at 12:55 PM, Jose-Luis Jimenez [REDACTED] > wrote:
Hi again,

If talking on the phone was useful, my cell phone is [REDACTED]. Although it would be easiest if we set up a time to talk, as my days are typically broken up with teaching, meetings etc. Or if you were around and could come by one day (best in early morning or end of working day) we could talk "on location" as well. If I don't hear we'll just talk at the open house in a couple of weeks.

Cheers,
-Jose

On Mon, Oct 6, 2014 at 10:42 AM, Jose-Luis Jimenez [REDACTED] > wrote:
Dear Katie,

I was just looking at the CH2M Hill Report on the alternatives to improve Gregory Creek, and I have a couple of questions. One of us will attend the open house but I thought we'd save time if you could answer earlier and it may also help anticipate the types of questions you may get there:

(1) All the alternatives have the same change to the culvert just upstream of our property, stating "Lower invert by 2-ft. Grade channel to accomodate larger culvert." I am unclear on what this means.

By "Lower invert" do they mean that the channel will be excavated so that the bottom of the culvert will be 2 ft lower than now?

When it says "Grade channel", does that refer to just in the culvert proper, or also up and/or downstream of the culvert, and if so by how many ft?

The drawings show a yellow trapezoid downstream of the culvert that appears to be 30 ft long streamwise and maybe 25 ft wide. Do you have any details of what would be done here, would that be concrete floor and walls for that stretch, or something else? Would this require modifying any of the work that we recently completed in that area? Would the details of this be negotiated with us?

(2) On p8 the report states "Any additional channel improvements needed to increase the capacity would require drainage easements from residents. In lieu of a drainage easement, a resident may work with the City to construct the improvements on their property per the master plan guidelines."

Do you have any further details of how the easements would be structured? We can imagine some versions that would be a clear yes and others that we would be much more worried about. An example legal document with drawings for an example (maybe non-existent) property would go a long way to clarify what's intended there for the city. Or if the city will consider several options for easements (or if "they need to be all the same"), that'd be good to know as well.

Would the city consider a hybrid model, in which the work is done jointly, with a contribution from us towards the cost, and with us having some say on the choice of the contractor etc.? We have been disappointed by the work that the city's contractors did to repair our area. Our contractor pointed out how no concrete steel reinforcement was used, stones were not placed properly (i.e. they were not stable and well stacked if not for the concrete), not enough mortar was used... so that the resulting work will not be very strong and may collapse again in the face of another flood. As an aside the gaps in the concrete and stones placed by the city contractor now provide a home for rats and mice that feed on the dumpster, I was just setting some traps for those yesterday.

On the parts that our contractor built he used a lot of steel reinforcement and better building practices so that we are more confident that it will last. As you know we have

been under construction for a long time so we have learned to evaluate the quality of construction and concur with the assessment of our contractor. Our broader experience with contractors (also at work where we are finishing construction of a \$3M new laboratory where we have had a lot of contractor problems) is that most will always do the cheapest most expedient route possible and ignore quality unless they are routinely monitored **and** there is a mechanism to **force them** to do the right thing. So with that background, if an easement meant that we just gave power to the city to hire a contractor and then we have no further say in the matter, we would be very worried. On the other hand, if we hired the contractor that has been working for us for the work within our property and we jointly supervised him, we would not be worried at all.

(3) The drawings don't indicate any further work on the bed of the creek between Marine and the alley, or between the alley and Arapahoe. Is that the intent, that those areas will remain managed by (or more likely ignored by) the respective property owners? This is especially problematic for the area between Marine and the alley, which is very degraded and for which I very much doubt the property owner will ever want to pay for anything substantial (pls keep that comment confidential).

Thanks,
-Jose

From: [Laz Nemeth](#)
To: [Knapp, Katie](#)
Subject: Gregory creek
Date: Tuesday, October 14, 2014 1:18:55 PM

You want to put in multiple 30 feet by 6 feet box culverts?
the concrete really ugly ones?

laz

From: [Laz Nemeth](#)
To: [Knapp, Katie](#)
Subject: Re: Gregory creek
Date: Tuesday, October 14, 2014 1:28:53 PM

oh yeah and please explain how the math on the last table makes sense.

specifically 7th, pen, college and euclid

culverts of multiple different sizes are claiming 100-50% blockage, to me it reads like enron accounting.

laz