

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: [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