

## MEETING SUMMARY

### Hydrology Approach – Van Bibber MDP & FHAD Monday, October 5, 2020 11:00 am Virtual Meeting

#### Attendees:

Lauren Copenhagen	Jefferson County	lcopenha@co.jefferson.co.us
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Amy Gabor	Olsson	agabor@olsson.com
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Brooke Seymour	MHFD	bseymour@mhfd.org

#### Discussion Items:

1. Van Bibber Creek hydrology previously was studied in 1977 and 1986. The hydrology from the current study is significantly higher than the previous studies.
2. Is there justification to change flows? Biggest difference in results with current study is timing – previous hydrology shows three distinct peaks, while current hydrology shows overlapping peaks. The previous flows can generally be replicated by using cross section geometries from the previous study in the current SWMM model. However, the cross sections used in the previous study have a wide trapezoidal geometry with very mild bank slopes, which is not representative of actual topography.
  - a. Kevin requested that Olsson check Froude numbers in the model to ensure results are not supercritical, which is unrealistic for any extended length in natural channels. Froude no. less than 0.8 recommended. Subsequent to the meeting, Olsson determined that there were a few links in the model with Froude numbers above 0.8, which can be reduced by increasing Manning’s n-value.
3. There is development activity along Van Bibber in Jefferson County, so it will be helpful to have draft hydrology and hydraulic modeling available to help guide the stream corridor through the developments.
4. The special hydrology study that Kevin is managing includes Van Bibber Creek, Little Dry Creek and Lena Gulch. Kevin is pushing for early results for Van Bibber, hopefully by the end of the month.
  - a. The revised annual peaks at Highway 93 have resulted in a lower 2013 peak flow estimate. The current best estimate is 400 cfs, not the 750 cfs used by Olsson in their 7-subcatchment calibration. Related to this, it was noted that the 2018 paleoflood investigation independently supported this lower estimate. The upper basin calibration may need to be revisited.
  - b. Note that the District has policies in place regarding onsite detention, inadvertent detention, canal interception and land-use for major drainageway master planning that will often produce different

results than stream flow gage data. The upper watershed of Van Bibber presents a unique opportunity to compare the model to gage data, since this area isn't impacted by these policies and development isn't occurring upstream of the Highway 93 gage.

5. We recognize that there is a varying range of statistically accurate peak flow rates and do not suggest recommending improvements to upsize reaches of the stream that have already been improved based on the previous hydrology. However, we suggest the team consider using the more conservative flows to identify recommendations to guide new development and improvements going forward. Once the special hydrology study and the initial hydraulic analysis have been completed, we will work through options for the MDP and FHAD as a group.
  - a. Arvada is particularly concerned about the Arvada Plaza, where flood control improvements have already been implemented based on the previous/effective hydrology. This area is politically sensitive with a high interest in redevelopment. The team agreed that due to the uncertainty in hydrologic estimates in general, we would not recommend improvements to areas such as the Arvada Plaza where flood control improvements have already been implemented based on previous hydrologic analysis.
  - b. Regarding the FHAD, it was made clear that the District would not remap the floodplain without the local government's support.
6. It will be important to document this full effort, including outside studies, in the master plan report.

**Next Steps:**

1. Olsson will proceed with both revised and effective hydrology in the HEC-RAS model so that we can understand how significant the differences are to the flood hazard delineation.
2. We will regroup and discuss the approach again once the special hydrology study is complete.