

# Gypsum KS

## Mitigation Technical Assistance

## Meeting Notes

<b>Meeting Time and Location:</b>	Tuesday, June 4 1:30 p.m.	City Hall 521 Maple Street Gypsum, Kansas 67448
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**Attendees:** See Sign-in Sheet attached.

### Presentation Agenda:

Background

Project Scope

65.10 Review

Modeling Scenarios

### Presentation Topics

Overview of modeling scenarios

- Accreditation of levee system and railroad embankment
- Accreditation of levee without railroad embankment
- Natural valley

Hydrology – leveraged data from USACE Floodplain Management Services (FPMS) study

Hydraulics – leveraged data from USACE FPMS study, Natural Valley analysis

65.10 overview

Scenario Analysis discussion

Freeboard analysis from USACE FPMS Study

Impacts of different scenarios, # of structures potentially impacted, flood depths, possible insurance costs

### Questions and Discussion Topics

1. Is the interior drainage mapping for the FIRM only for 1 foot of depth and greater?
  - a. No. Floodplain boundaries are delineated where the water surface elevation meets the ground surface elevation (e.g. 0 ft depth contour). This applies to all floodplain boundary delineation whether or not it is interior drainage. In some circumstances where the

shallow flooding occurs that is less than 1ft of depth on average for the entire flooded area, then those areas can be mapped as a moderate flood hazard (Zone X shaded). Detailed engineering analysis, high resolution topography, along with engineering judgement are needed to make this determination in compliance with FEMA's guidance for shallow flooding.

2. Did you consider an alternative for extending the levee to high ground to prevent the split flow from occurring?
  - a. Yes. The USACE did consider this alternative in their FPMS. The results of their analysis would greatly increase the water surface elevation in the Spring Creek Diversion channel causing issues with freeboard along the levee. [update] Back at the office we reviewed the USACE's FPMS report and confirmed that as much as 3.85 feet with an average raise of 2.5 feet would occur in the Spring Creek Diversion channel if the levee was extended cutting off the split flow. Although the concept did not overtop the levee during the 1% annual chance exceedance event, less than 1-ft of freeboard would remain during the flood event, thus not complying with 65.10 freeboard requirements [USACE 2018]. The flood insurance premium presented at the meeting of the Accredited with Railroad scenario is an appropriate analysis for the levee extension as both scenarios prevent the Spring Creek divided flow path (split flow) from enter the town.
3. When does the City need to make the decision whether or not to pursue certification of data?
  - a. October 2019 is the decision point presented during the kickoff meeting in March.
4. Can you have an open house around September with the citizens of Gypsum to hear the same information as presented to the Mayor so that they can learn directly from us [KDA, FEMA, USACE, Stantec].
  - a. Yes. We will push up the Flood Risk Review meeting to occur in September and then have an open house afterwards. The meeting is tentatively scheduled for September 24, 2019.
5. The Levee is shown as above the Water Surface Elevation in the Natural Valley scenario but floodplain is shown on the landward side of the levee. What is the process in the hydraulic modeling of the Natural Valley to create the Water Surface Elevations and how is the levee accounted for in the model and the resulting map? Likewise for the railroad embankment?
  - a. For the Natural Valley analysis, the model is run with the levee in place but modified to allow for conveyance of water to travel directly from the stream into the overbank landward of the levee to develop the water surface elevations landward of the levee. The floodplain mapping is developed with the levee in place, extending the boundary to the point in the topography where depth is 0ft but then the levee embankment topography is filled in to prevent/manage any floodplain development on the levee embankment itself. The same process is used for the railroad embankment.
6. A number of houses are either not shown on the maps provided, or are shown within the floodplain boundary. Why don't all the structures show up or show as being below the water surface elevation?
  - a. The topography used for this exercise was developed from LiDAR flown in 2012. Any structure built after that or fill or other dirt work that may have occurred after that, will not show up.
7. What rainfall event is considered the 100-year rainfall?
  - a. The modeling in the FPMS study uses a 7.42 inch rainfall event in 24 hours. This number was verified and is slightly lower than the 7.8 inches indicated during the meeting.

Additional comments:

- The railroad embankment improvement will be very difficult to accomplish because the City does not own the land. The land the railroad embankment is on is privately owned by the parcel owners. Doing an improvement of the railroad would involve purchase of the land which is a difficult challenge.
- The scenarios will be analyzed for a couple of specific locations of interest identified at the meeting but not shown in the building footprints or imagery.

- Potential insurance scenarios that were provided were based on costs at this time. Changes to the flood insurance program could change those scenarios. Changes are expected to the flood insurance program in the near future.