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Division of Water Resources

FEMA

wood.

Crawford County

Floodplain Mapping Project
Data Development Kickoff Meeting

July 14, 2021

While we are waiting, please enter your name and community in the chat box!

Your engagement in this process is important to the success of this project, so thank you for taking the time to be here today!

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Introductions

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Tara Lanzrath, CFM
Floodplain Mapping Coordinator

Joanna Rohlf, CFM
Floodplain Mapping Specialist

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Floodplain Mapping Specialist

Steve Samuelson, CFM
State NFIP Coordinator

Cheyenne Sun Eagle
NFIP Specialist

FEMA – Region VII

Andy Megrail
Regional Project Officer

Wood Environment & Infrastructure Solutions

Joe File, PE, CFM
Senior Associate / Program Manager

Maria Neeland, PE, CFM
Project Manager / Engineer

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Today's Goals

- *Share details on the mapping project*
- *Get initial feedback on modeling methods*
- *Review future steps*

Background

Background

- Osage Custom Watershed BLE Project
  - *Kick-off Meeting and BLE Review: October 22, 2019*
  - *Discovery Meeting: February 5, 2020*
- Lower Neosho Custom Watershed BLE Project
  - *Kick-off Meeting and BLE Review: November 19, 2019*
  - *Discovery Meeting: April 15, 2020*

Background

- Crawford County Effective Mapping is dated April 2009

- Through Discovery and conversations with County stakeholders, it was determined that updated modeling and mapping would benefit Crawford County.

Review of the Work Ahead and How We Propose Doing It

Crawford County 2021 Proposed Mapping Updates

Scoped Studies

New Zone A - Gage Analysis

New Zone A studies will be developed for these streams using 2D Hec-Ras hydraulics and hydrology calibrated to Gage Analysis flows.

New Zone A - Excess Rainfall on Grid

New Zone A studies will be developed for these streams using 2D "excess rainfall-on grid" hydrology and 2D Hec-Ras hydraulics.

New Zone A - HEC-HMS

New Zone A studies will be developed for these streams using 2D Hec-Ras hydraulics and hydrology calibrated to HEC-HMS model flows.

New Enhanced Zone A - Excess Rainfall on Grid

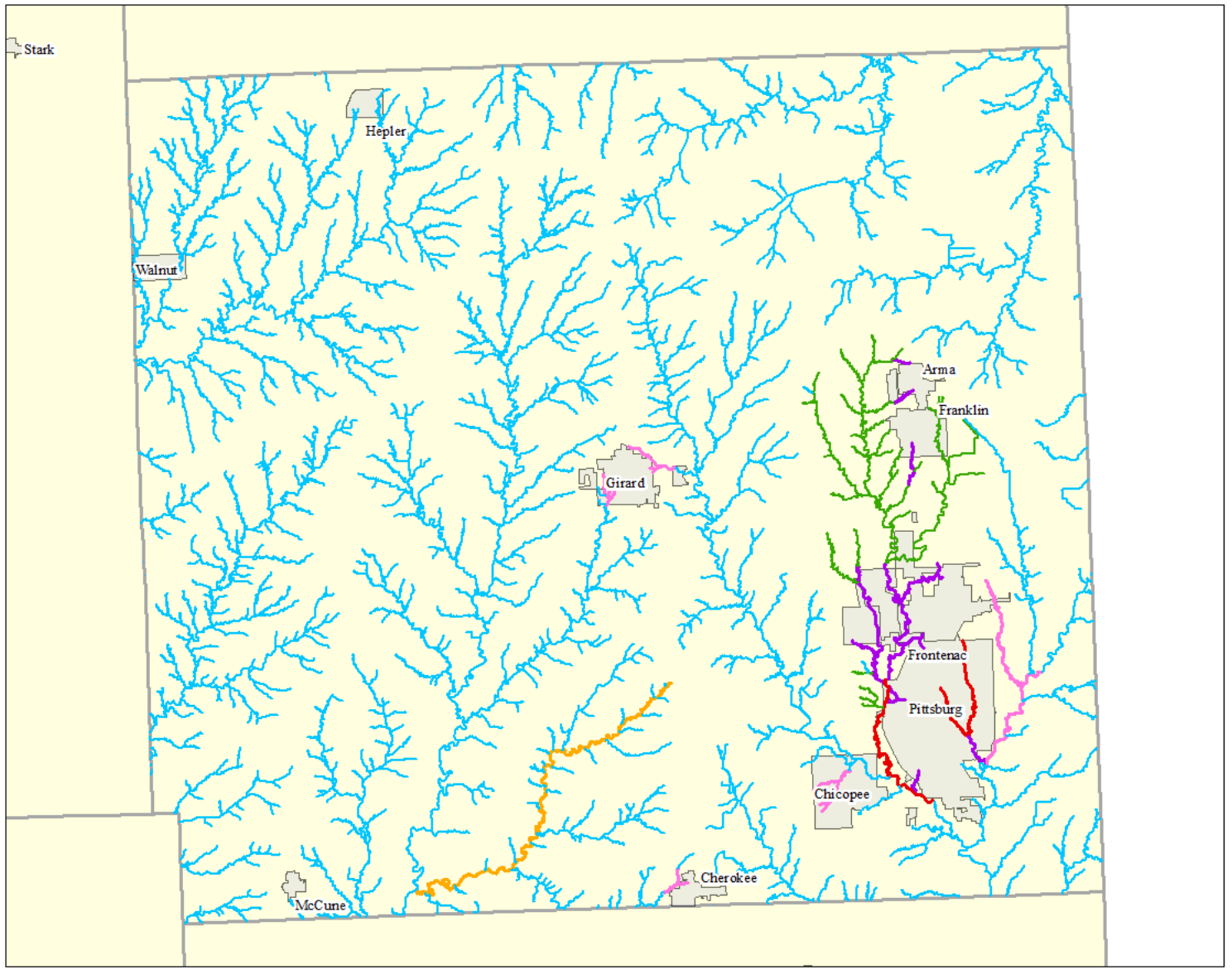
New Enhanced Zone A studies will be developed for these streams using 2D "excess rainfall-on grid" hydrology and 2D Hec-Ras hydraulics. Field measured structure data will be incorporated into the modeling.

New Enhanced Zone A - HEC-HMS

New Enhanced Zone A studies will be developed for these streams using 2D Hec-Ras hydraulics and hydrology calibrated to HEC-HMS model flows. Field measured structure data will be incorporated into the modeling.

New Zone AE with Floodway - HEC-HMS

New Zone AE studies will be developed for these streams using 1D or 2D Hec-Ras hydraulics and hydrology calibrated to HEC-HMS model flows. Floodways will be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.



0 1.75 3.5 7 Miles

N

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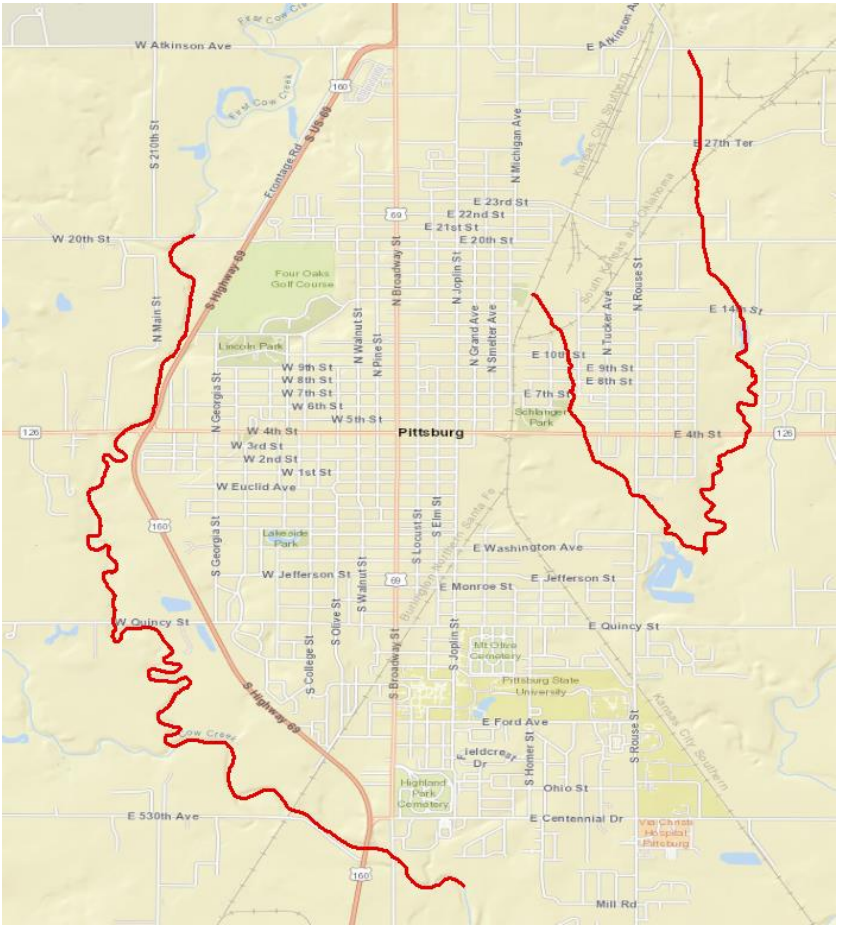
New Zone AE with Floodway

- Pittsburg:
  - Cow Creek
  - First Cow Creek
  - East Fork Taylor Branch
  - Taylor Branch



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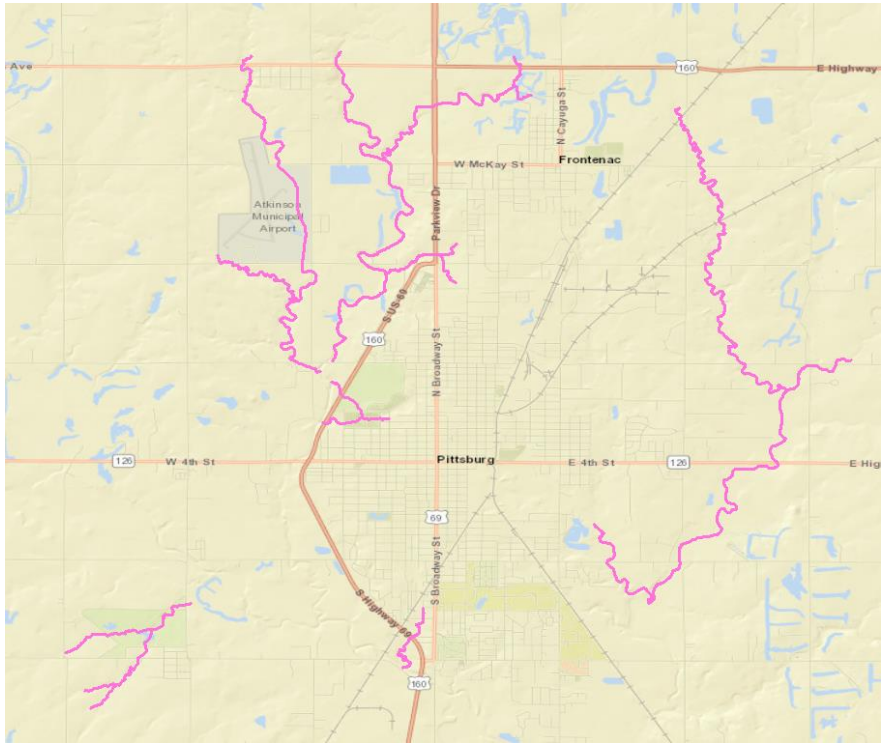
New Enhanced Zone A

- Pittsburg/Frontenac/Chicopee:
  - First Cow Creek and 8 Tributaries
  - 1 Tributary to Cow Creek
  - 3 Tributaries to Second Cow Creek
  - East Cow Creek and 1 Tributary
  - Taylor Branch 2



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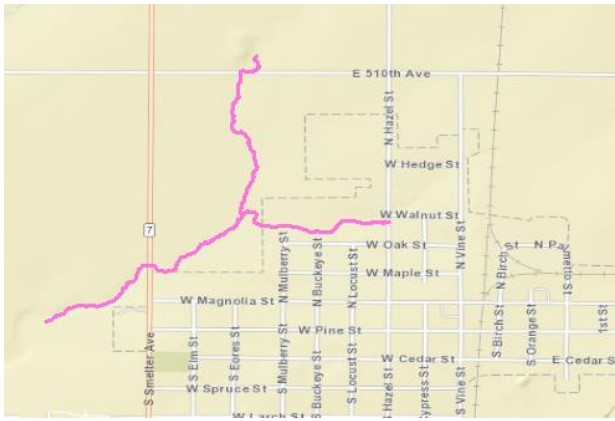
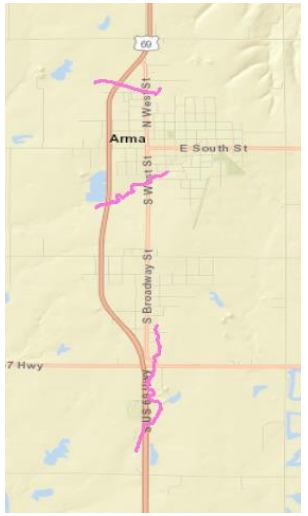
New Enhanced Zone A

- Cherokee:
  - Wolf Creek and 1 Tributary
- Girard
  - Thunderbolt Creek and 2 Tributaries
  - 2 Tributaries to Second Cow Creek
- Arma
  - 3 Tributaries to First Cow Creek





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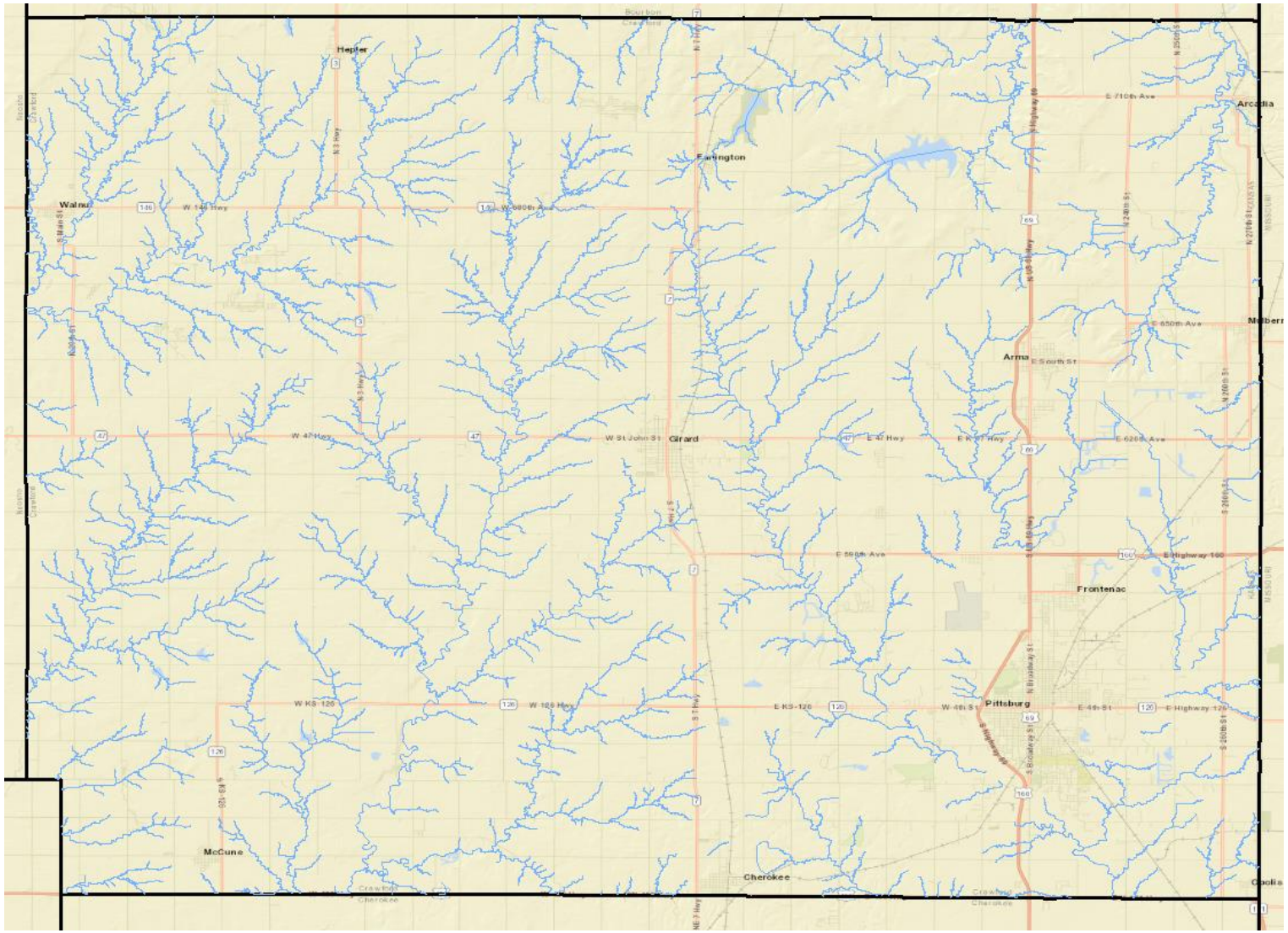
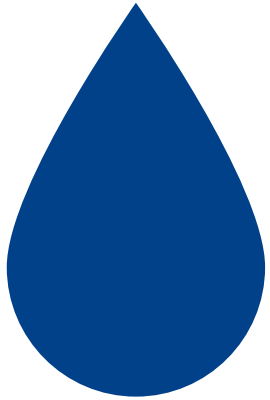
New Zone A

- Remainder of Streams in the County



Definitions



Hydrology

How Much Water?

Hydraulics

How High Will Water Get?

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2D Hydraulic Modeling will be used for the Zone A streams

- Enhancements will be made to the BLE modeling that was performed for the Zone A streams.
  - Comments made and additional information gathered during the Discovery phase will be used to enhance the modeling
  - Enhanced Zone A streams will include field measured data for culverts and bridges
- The hydrology is built into the RAS modeling platform using excess rainfall-on-grid methodology.
  - This will be calibrated to gage analysis and HEC-HMS model flows

1D or 2D Hydraulic Modeling can be performed for the Zone AE with Floodway streams

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Zone AE with Floodway Hydrology

- HEC-HMS (Rainfall-Runoff) Modeling will be performed for the Zone AE with Floodway streams
  - Used as flows for 1D modeling or calibration information for 2D modeling

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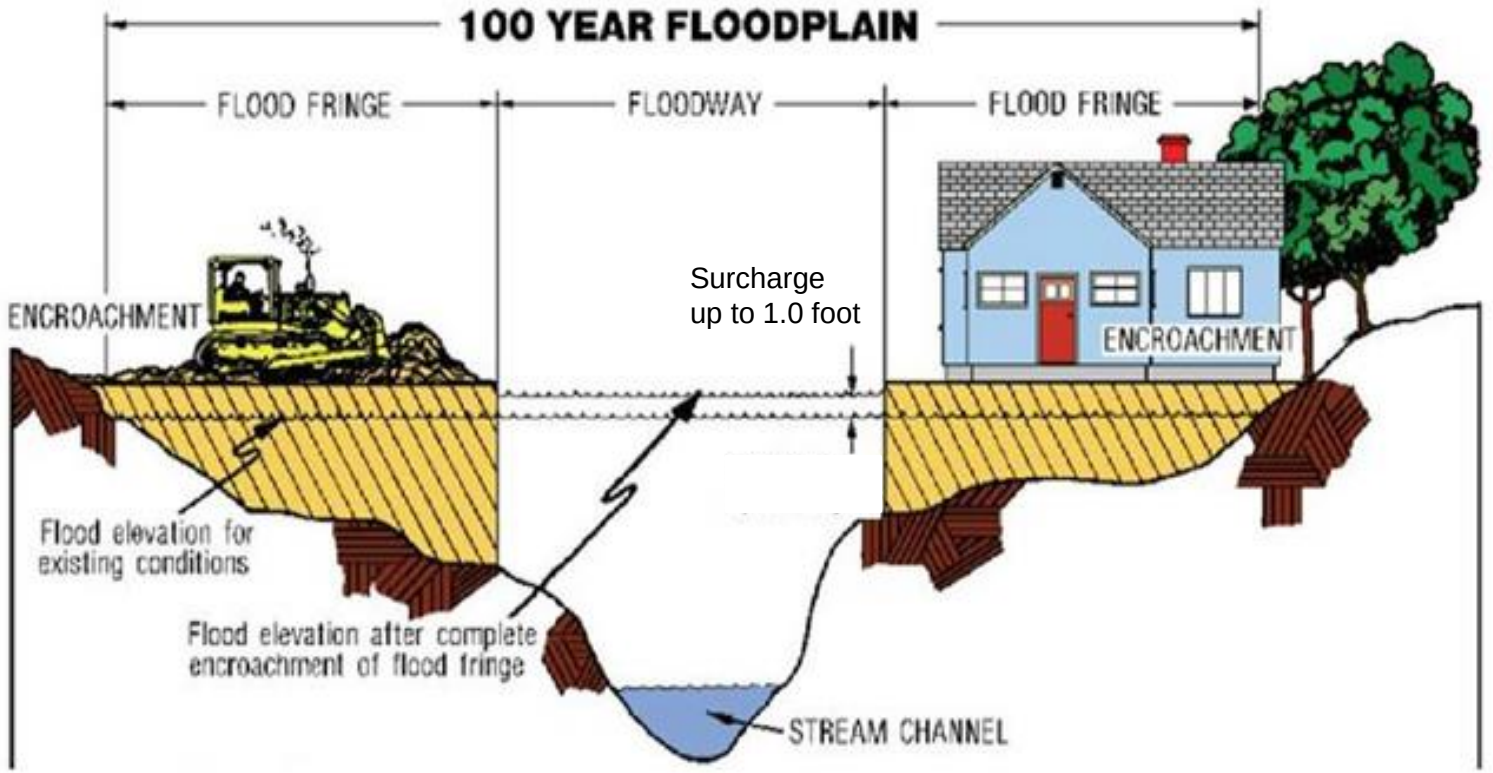
A portion of the Zone AE modeling includes the development of a floodway

A Floodway is the area within the floodplain that must be reserved in order to discharge the base flood without cumulatively increasing the WSE by more than 1.0 foot.



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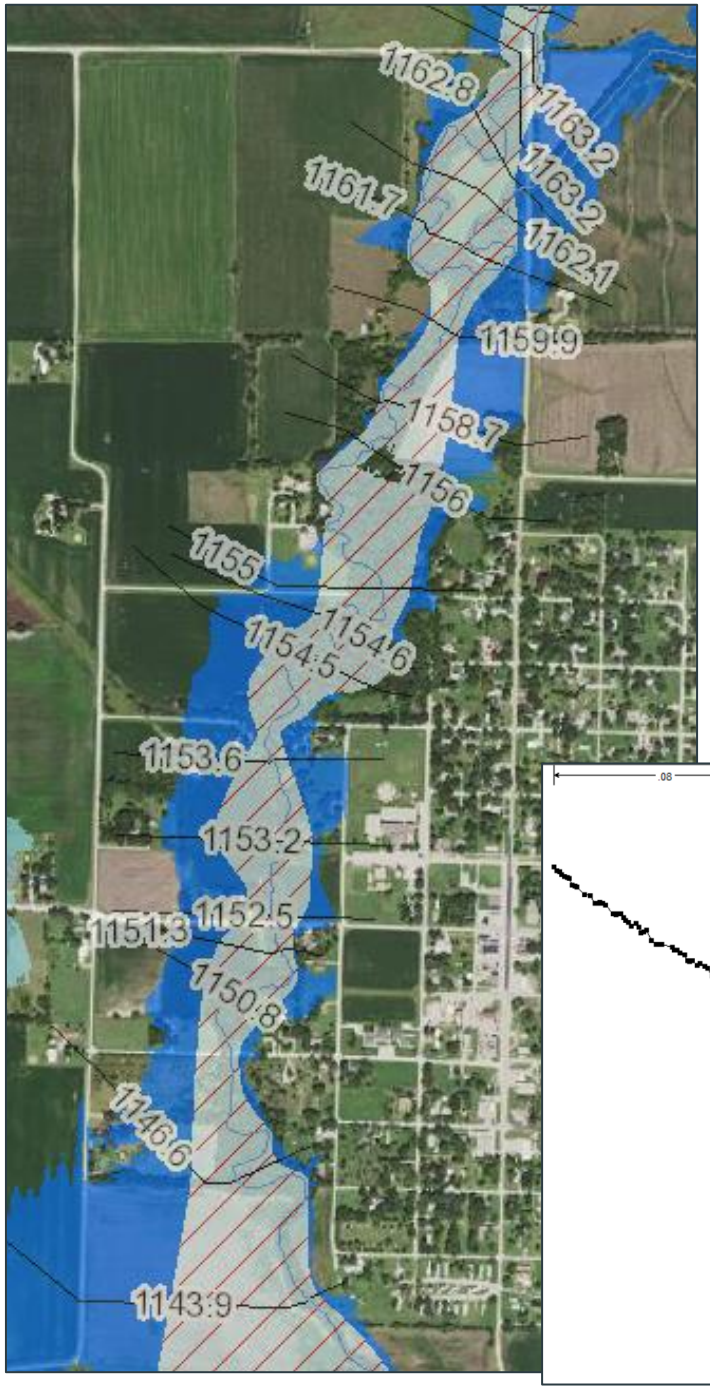
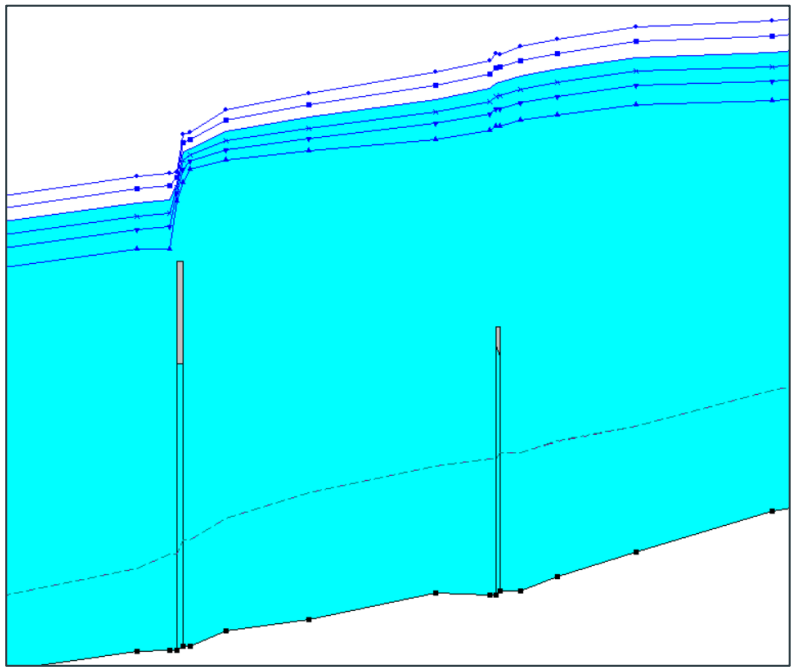
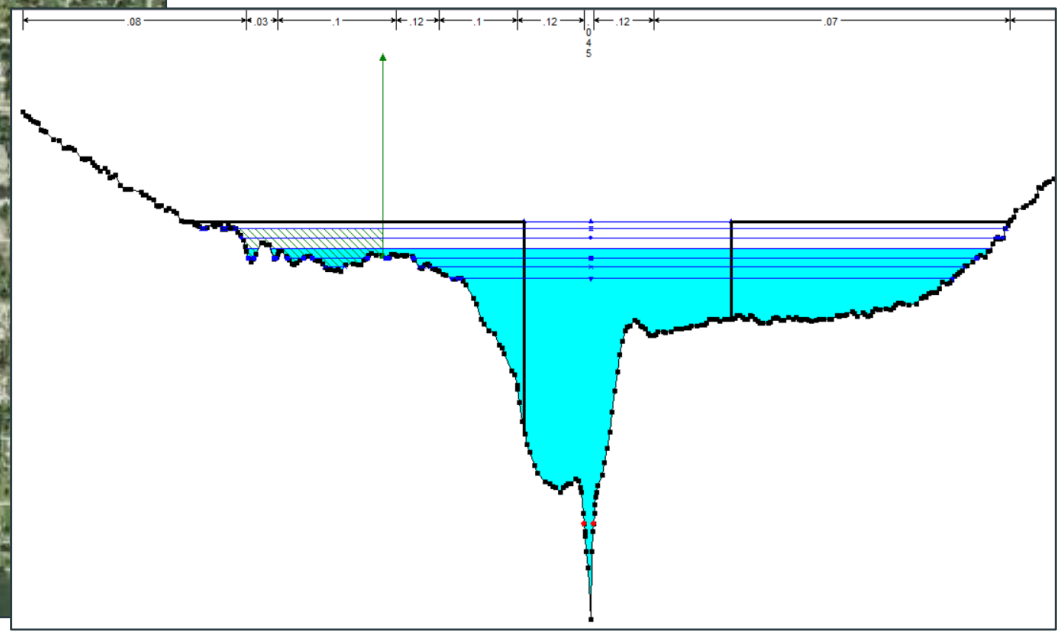
1D Modeling







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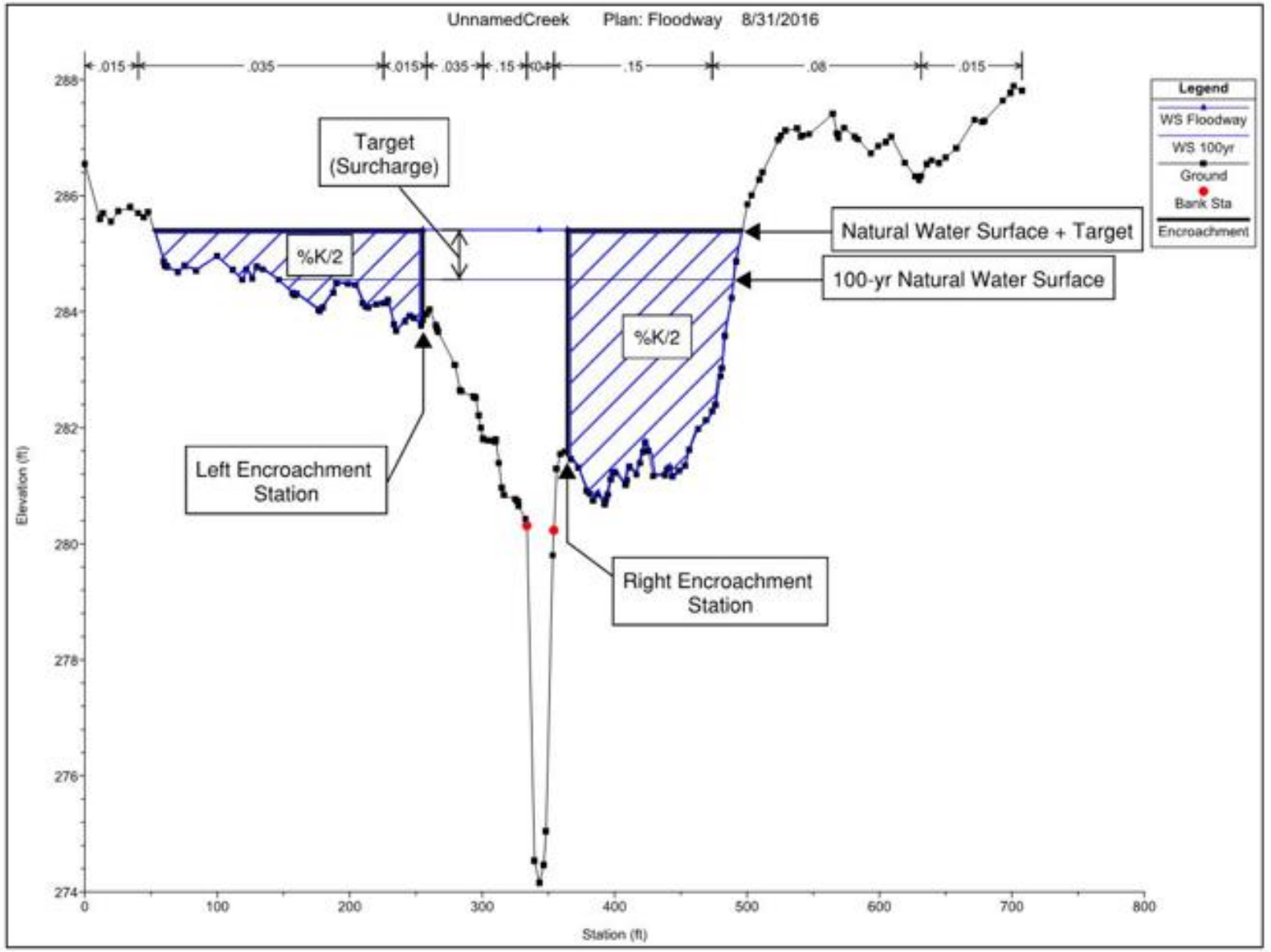
1D Floodways



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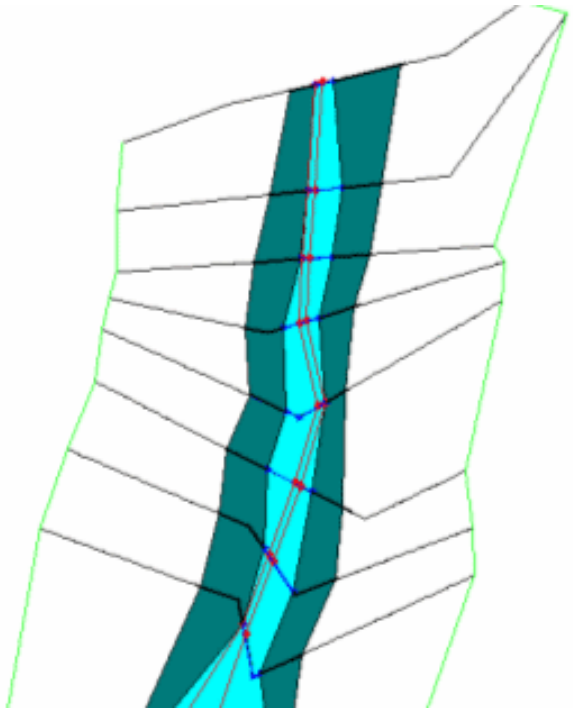
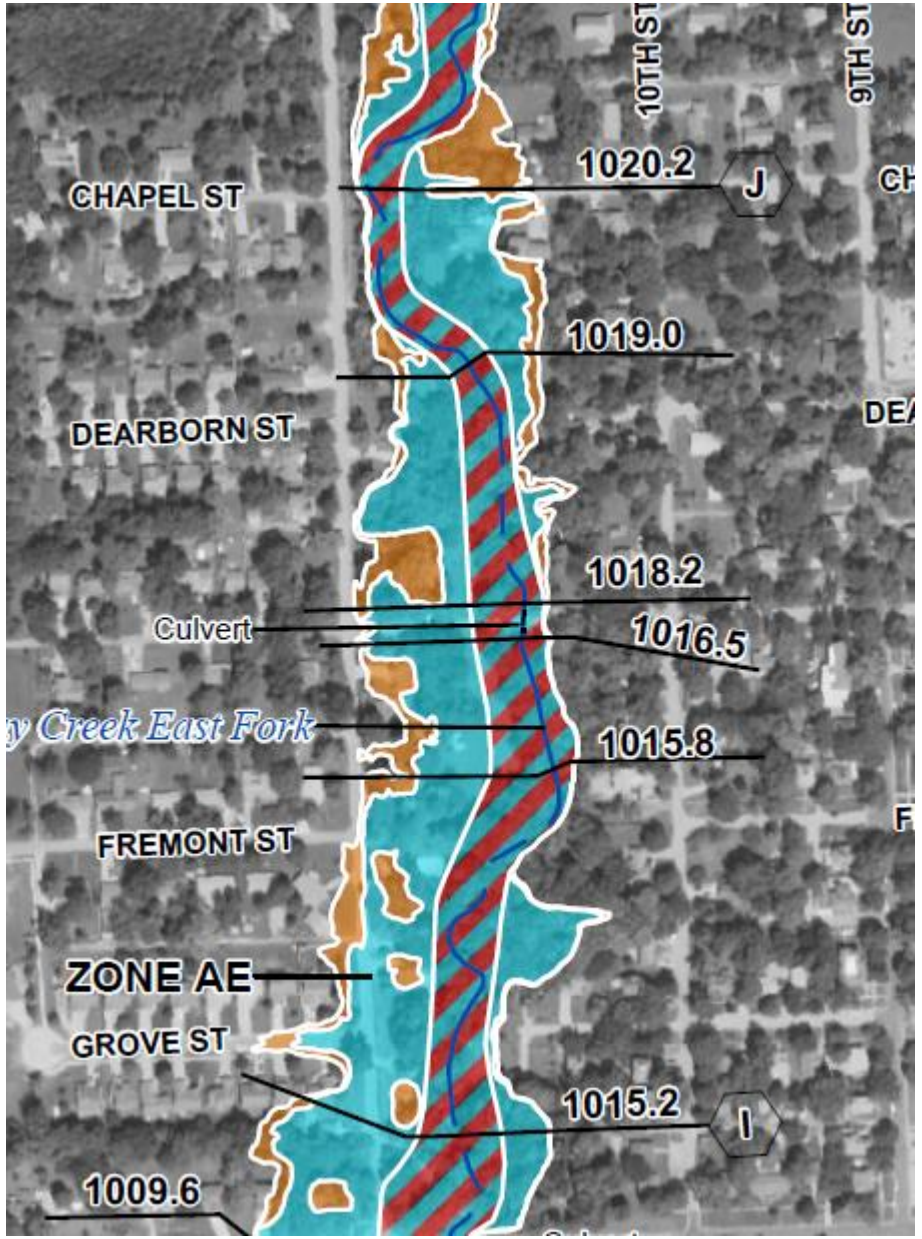
1D Floodways





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Benefits of 1D modeling for Zone AE streams

- The local consulting community has more experience with 1D modeling
  - Especially important when considering LOMR applications and future use of the modeling
- 1D Floodway Guidance is more established
- 1D modeling has similar accuracy to 2D modeling in areas with more relief (steeper terrain)
- The floodway will look more similar to the effective floodways
- The FEMA reviewers are more familiar with 1D floodways

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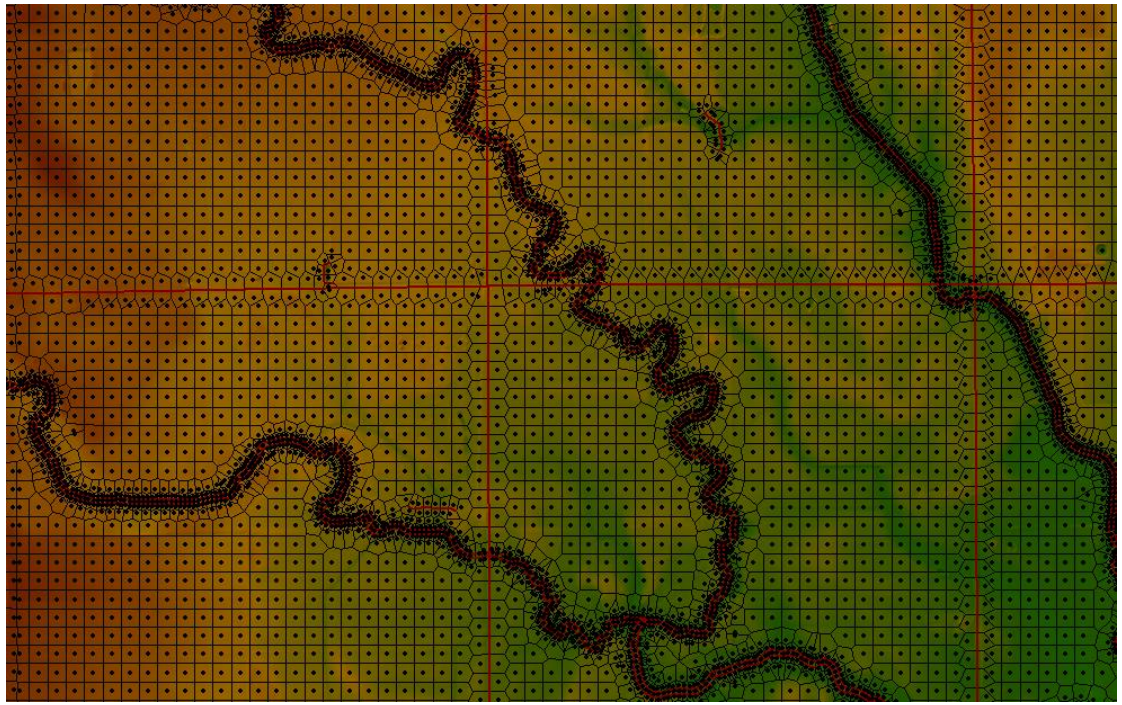
2D Modeling



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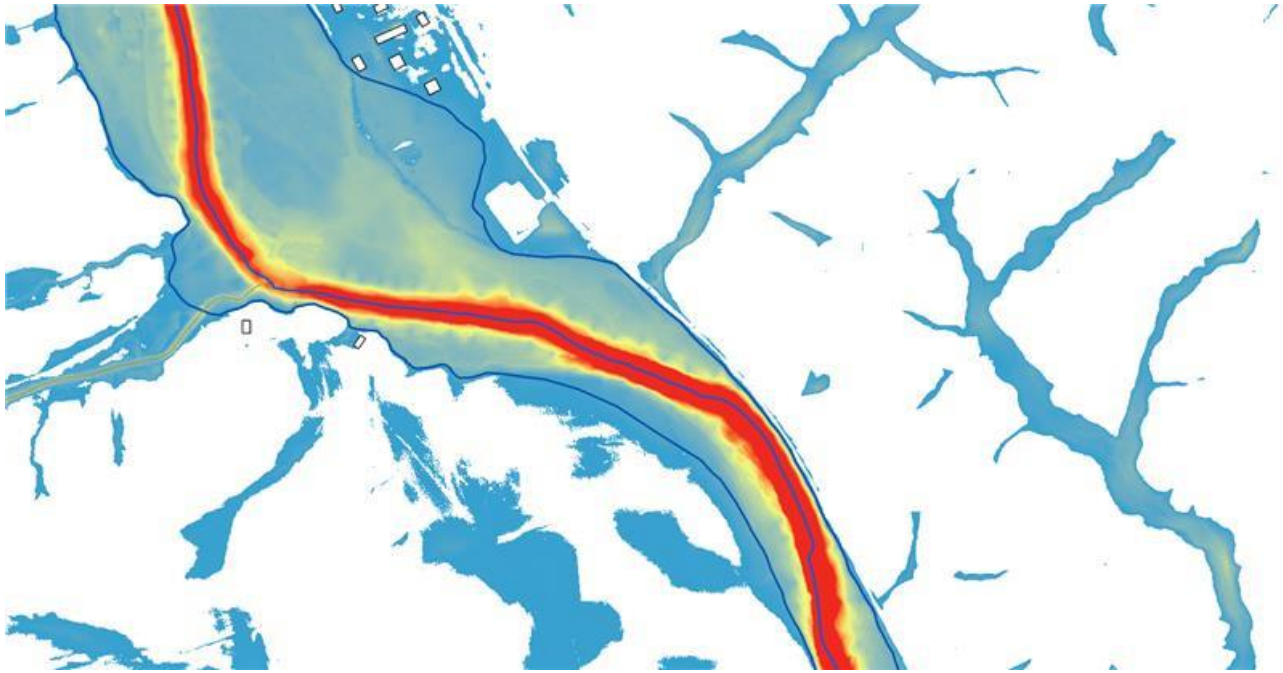
2D Floodways



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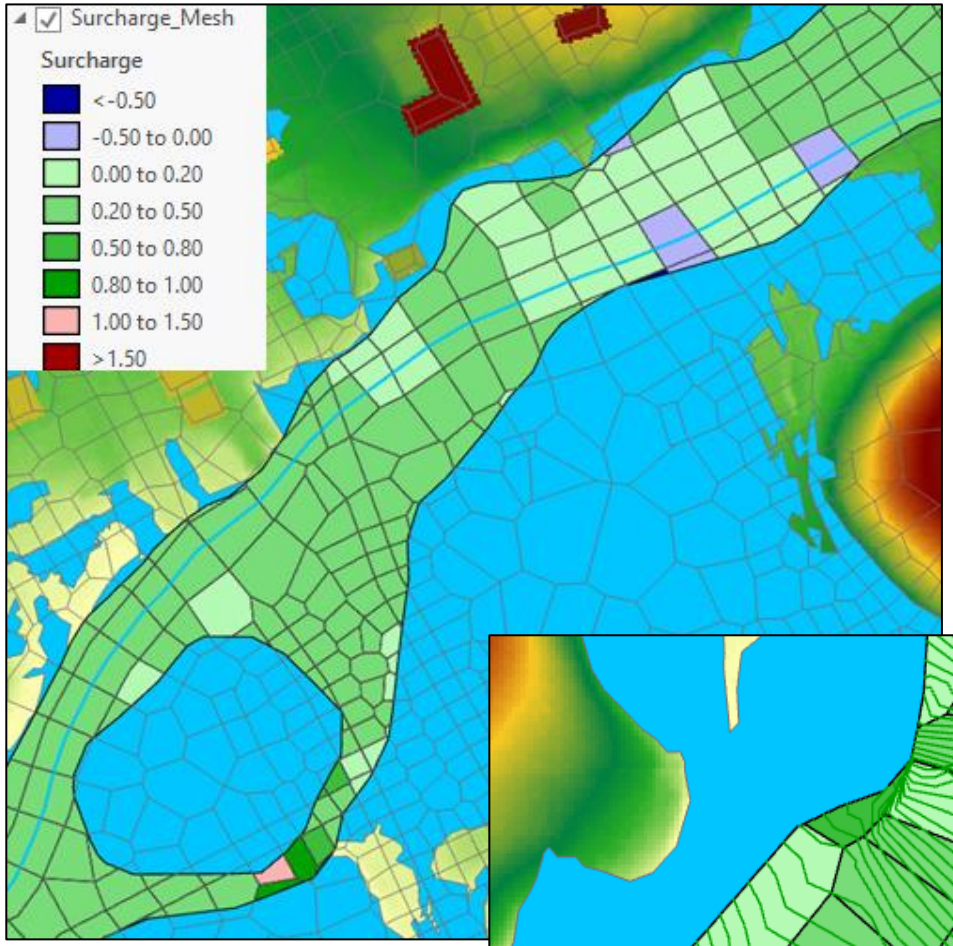
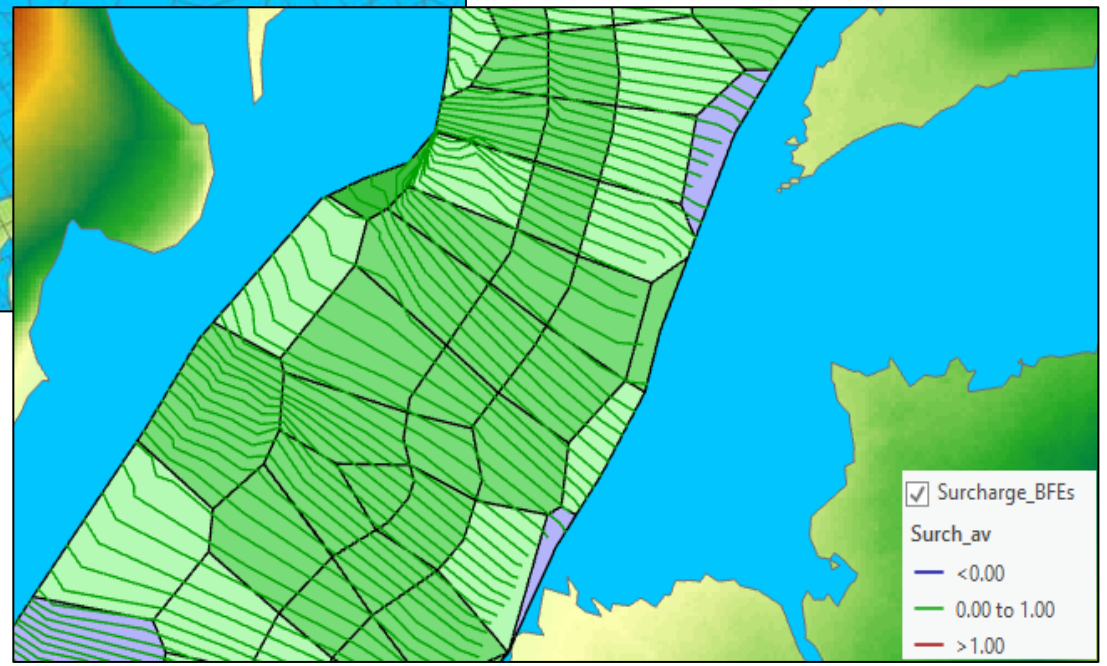
2D Floodways





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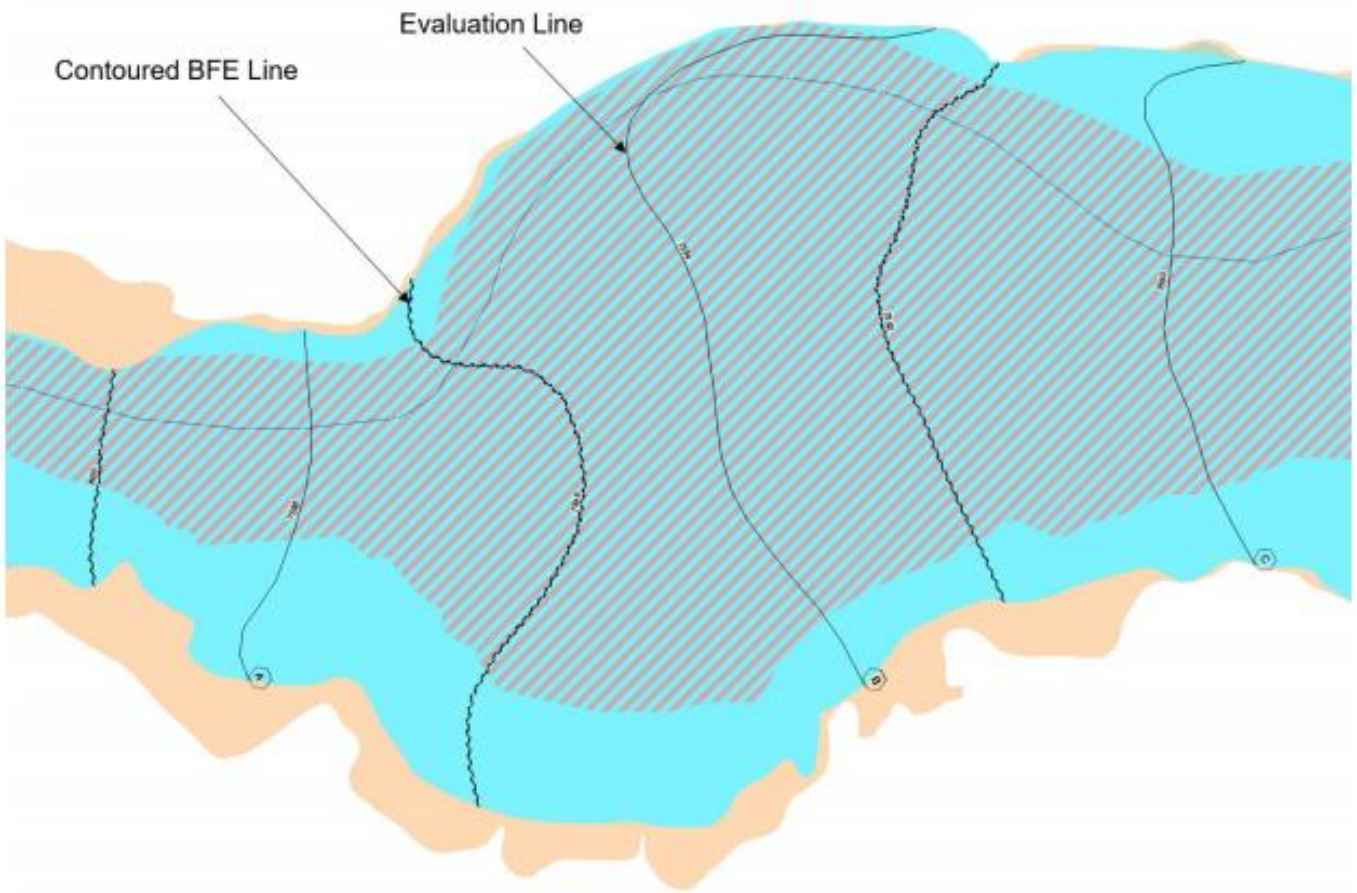
2D Floodways



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Benefits of 2D modeling for Zone AE streams

- 2D more accurately portrays flooding where water flows in multiple directions, such as flat areas and braided streams; as well as shallow flooding.
- 2D modeling is at the forefront of modern modeling practices
  - 2D will be used for the Zone A streams as well
  - Note that 2D floodway guidance has been released, but has not been put into practice for long

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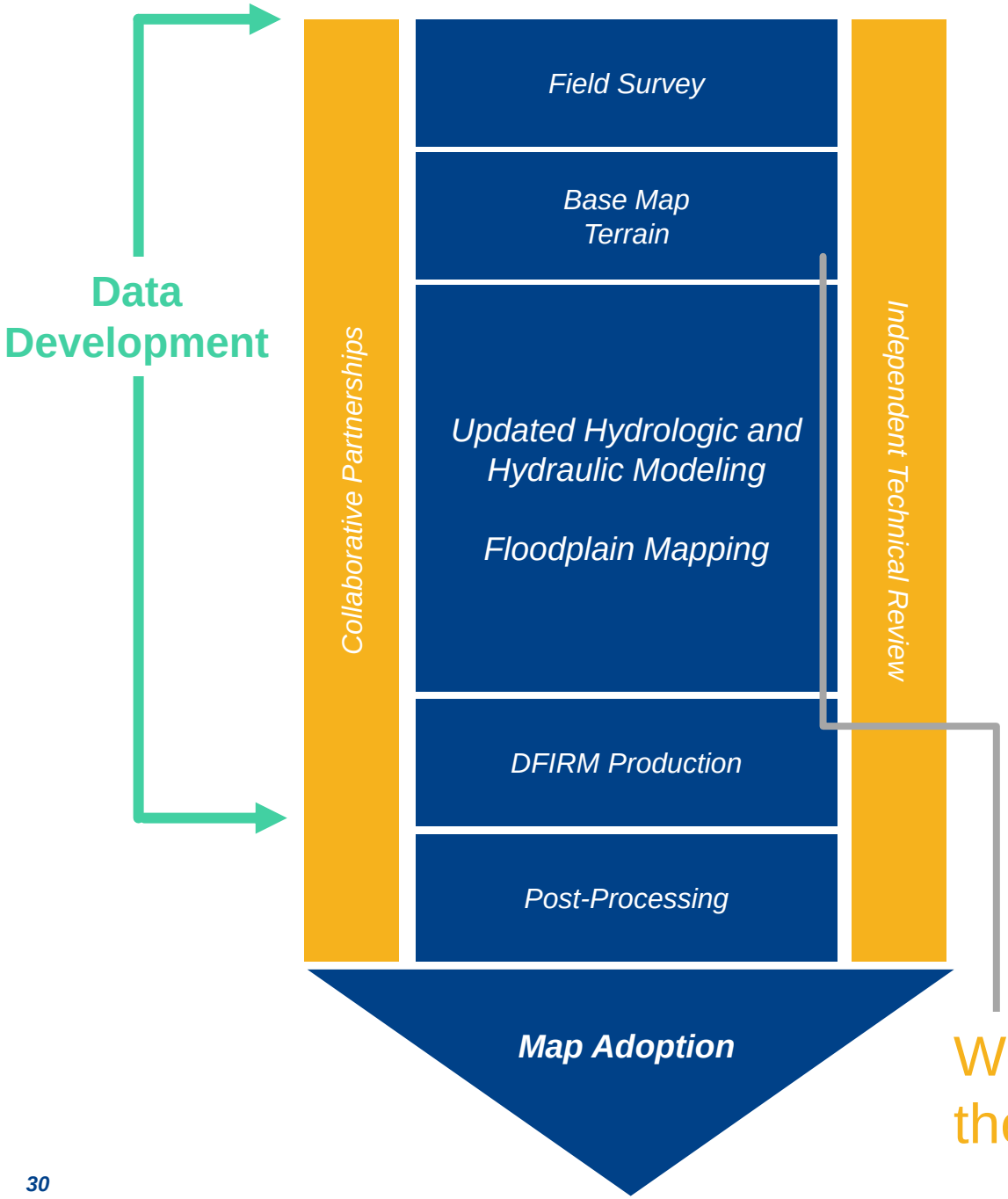
Zone AE Recommendation and Discussion

At this time, it would be Wood's recommendation to pursue 1D modeling for the Zone AE with Floodway streams in this project given the terrain in the area and the limited experience of the local consulting community with 2D modeling, but we want to hear **your thoughts**.

Next Steps



Project Tasks

1. Field Survey
2. Base Map and Topography Preparation
3. Hydrologic and Hydraulic Modeling
4. Floodplain Mapping
5. DFIRM and FIS Production
6. Post-Preliminary

We are about to begin the modeling task

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Our Next Steps:

- We will complete the engineering analysis previously described
- We will develop your draft regulatory floodplain maps.
  - Also known as your Flood Insurance Rate Map (FIRM)
- We will develop your draft Flood Insurance Study (FIS).
- We will have a community review period and a public review period

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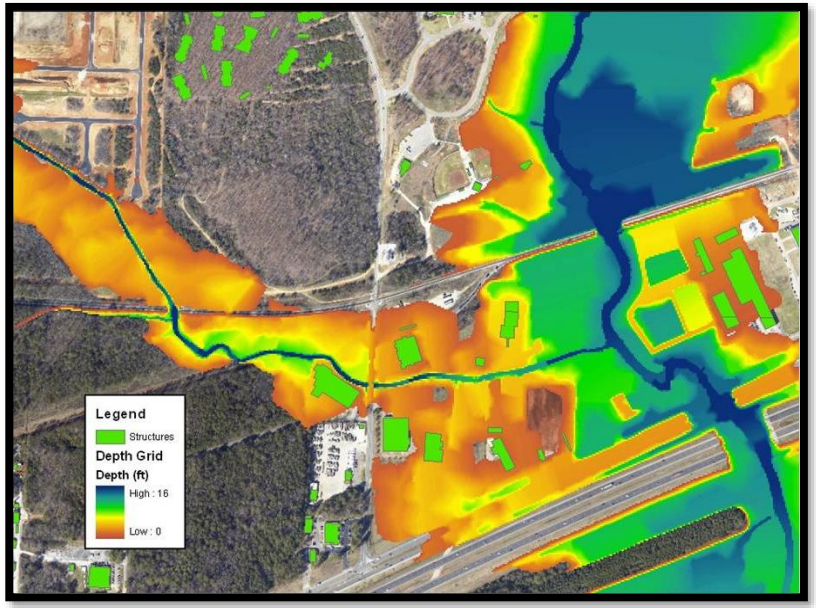
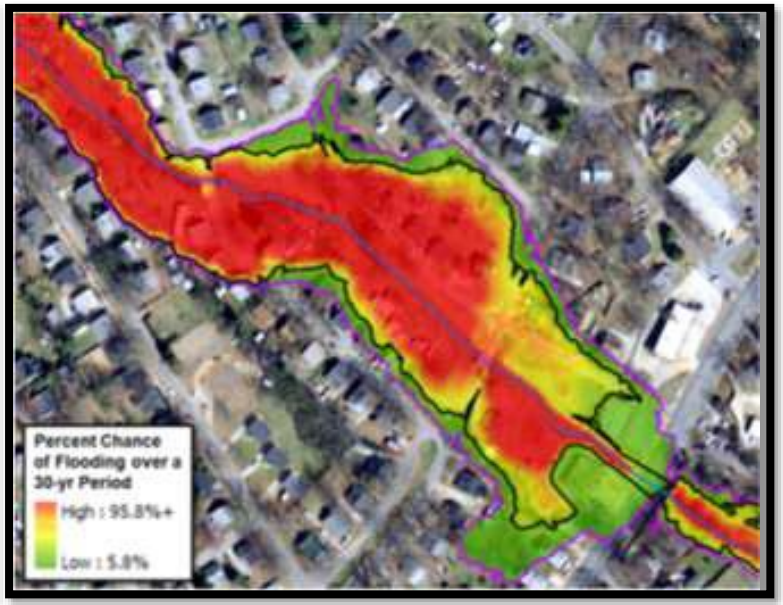
Our Next Steps:

- We will also be developing flood risk products for all of Crawford County as part of this project.
  - Will use the latest data available for all streams





Project Timeline

Kick-off Meeting and Initial Community Feedback:
[TODAY!]

Data Development Work:
[Now until the end of 2021]

- *Base Map*
- *Topographic Data*
- *Field Survey*
- *Develop Hydrologic and Hydraulic Models*
- *Floodplain Mapping*

Flood Risk Review Meeting:

[~January 2022]

- *Your **review** and **feedback** on the draft maps*

Project Timeline, continued

Community **comments** will be **addressed**

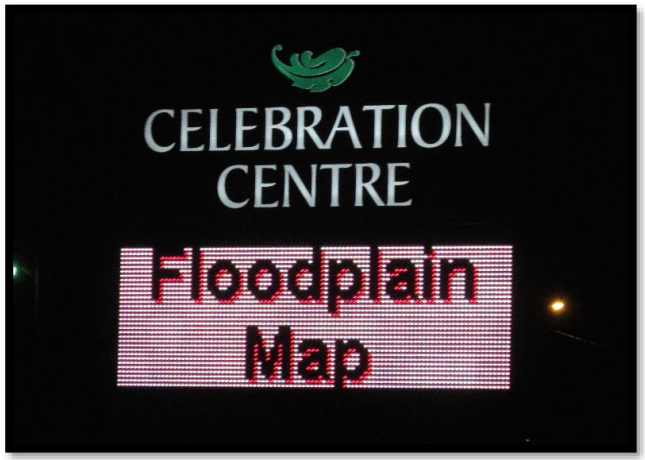
Public review of the draft maps

- *Includes Public Open House*

Preliminary Map Products

- *Preliminary DFIRM Community Coordination Meeting*

Post-Preliminary Processing



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Key Takeaways

Floodplain Mapping Projects take time

Your involvement in this process will result in better flood information for your community

DON'T HESITATE TO CALL, WE ARE HERE TO HELP

Resources

Online Project Information

Project Website

- Scoping Maps, Project Timeline, Meeting Presentations, Newsletters, Technical Reports, Web Review Map
- https://www.agriculture.ks.gov/divisions-programs/dwr/floodplain/mapping/mapping-projects/lists/mapping-projects/

Web Review Map

- Provide comments on areas impacted by past floods, community needs, etc.
- Review of floodplain data

Story Maps

- Project Info
- “Floodplain Current”: Mapping Process ‘Nuts and Bolts’


Any Questions?