# Upper Middle Arkansas Custom Watershed Discovery Meeting

***December 2023***

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

FEMA

Kansas Department of Agriculture
*Division of Water Resources*

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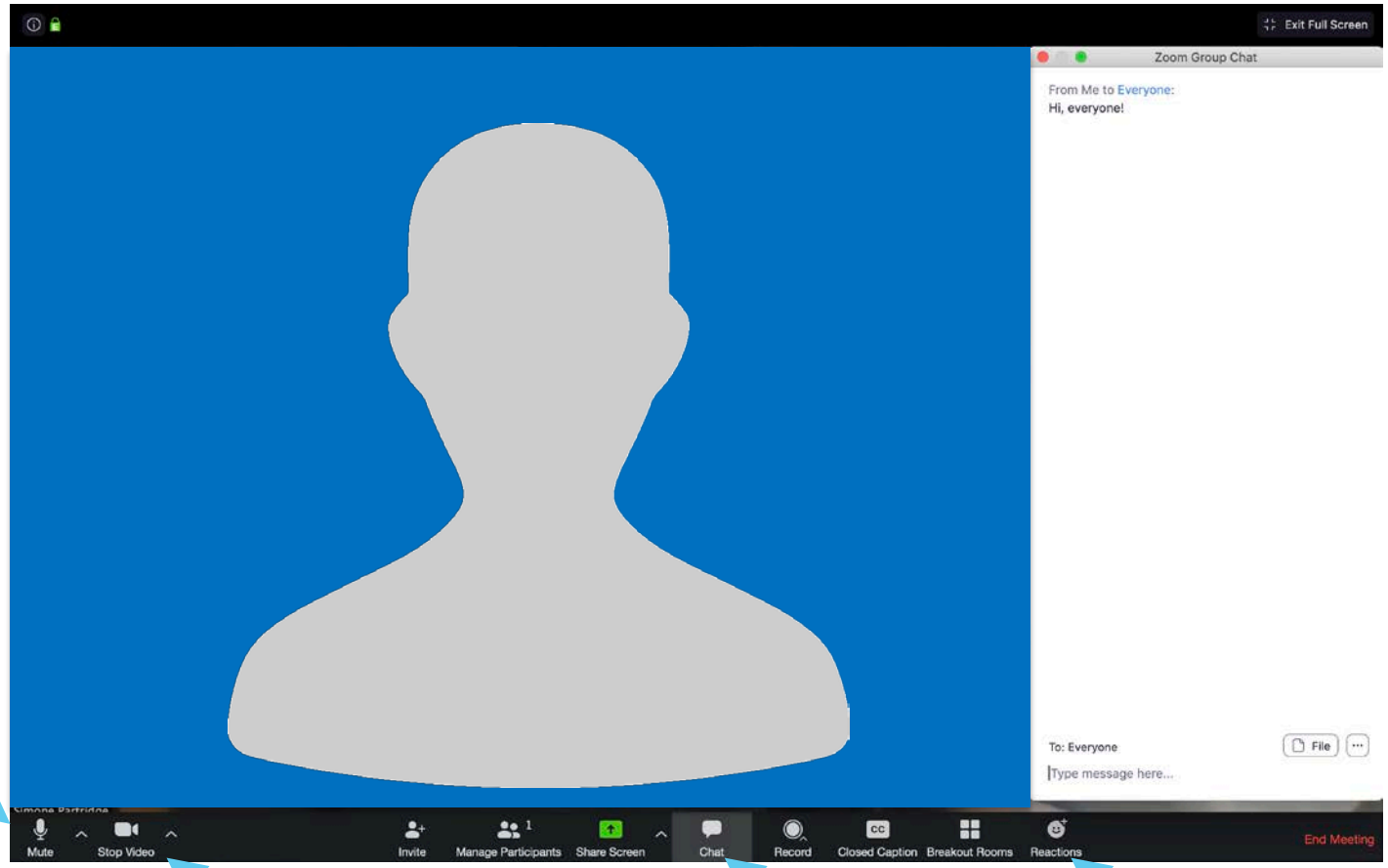
*Thank you for joining us today!*

**Your input is very important to this work.**

# Zoom Features




***Mute / Unmute***

***Start your Video***

***Use the Chat Feature***

***Reactions***

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# Rules of the Road

- Attendees will be muted during the presentation, to help eliminate background noise.
- Check out the chat to ask questions during the presentation! Or feel free to “raise your hand.” We will pause for questions at various stopping points and have several poll questions.
- If you want to share your video, please do!
- For technical difficulties: send a private chat to Bill Pace or email *william.pace@ks.gov*.
- We’ll be recording this webinar for those who aren’t able to attend today.

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# Introductions

## Kansas Department of Agriculture

Joanna Rohlf, *CFM, GISP*
*Floodplain Mapping Coordinator*

William Pace, *CFM*
*Floodplain Mapping Specialist*

Tara Lanzrath, *CFM*
*State NFIP Coordinator*

Cheyenne Sun Eagle, CFM
*NFIP Specialist*

Angi Goetze
*Floodplain Outreach Specialist*


## WSP – Mapping Contractor

Matt Long, *PE, CFM*
*Lead Engineer*

Lisa Tuckwin, CFM, GISP
*GIS Manager*

## FEMA Region VII

Dawn Livingston, *Project manager*

# Today's Goals

| | |
|---|---|
| Review | Review WHY WE DO THIS WORK |
| Share | Share WHERE WE ARE NOW & what the data is telling us about flood risk |
| Discuss | Discuss how WE CAN HELP |
| Preview | Preview the PLANNED WORK AHEAD and how we propose doing it. |
| Next Steps | Discuss Next Steps and YOUR ROLE in the Process |

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# Why We Do This Work

# FEMA Floodplain Mapping Program

- Risk Mapping, Assessment, and Planning (Risk MAP).
- Performed on a watershed basis.
- Consists of both Regulatory & Non-Regulatory Products.
- Through Risk MAP, we provide updated floodplain maps, as well as other (free!) data and tools that can help you plan to reduce your community's risk.

RiskMAP
Increasing Resilience Together

# Planning: The “P” in Risk MAP

- The flood risk data from this work can – and should – inform your regional Hazard Mitigation Plan (HMP).
  - Region B: Rush County
  - Region D: Clark, Ford, Gray and Hodgeman Counties
  - Region E: Barton, Edwards, Kiowa, Pawnee, Pratt and Stafford Counties
  - Region G: Reno and Rice Counties

- Common themes in the regional plans:
  - Identify and seek additional methods of financial and technical assistance for hazard mitigation projects.
  - Acquire or conduct structural remediation of floodprone properties.
  - Study and implement drainage issues in floodprone areas and make recommendations for flood control measures, flood management procedures, and low-water crossing improvements.

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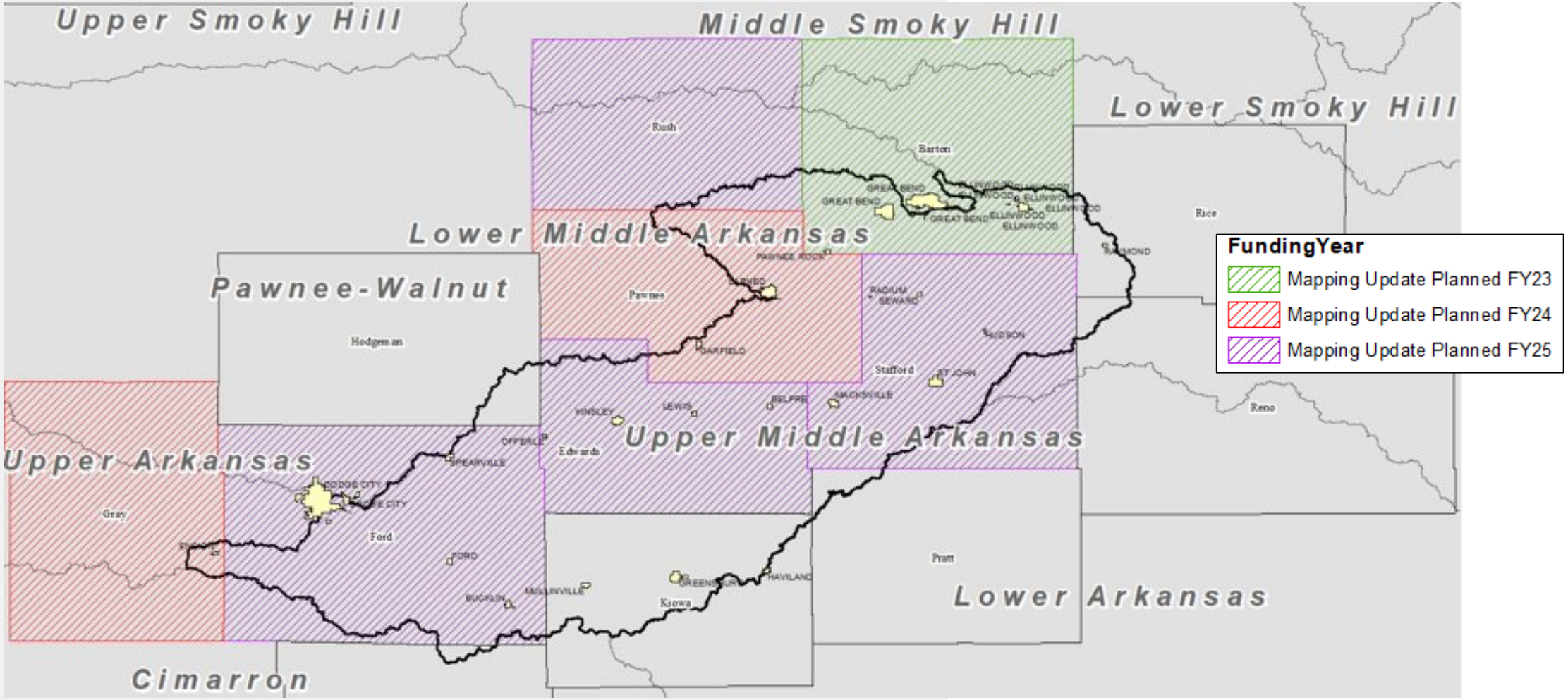
***We Can Help with Technical Assistance!***

# Where We Plan to Update Your Map






Barton County-

- Funded in FY 2023

Edward County-

- Anticipated for 2025

Ford County-

- Anticipated for 2025

Gray County-

- Anticipated for 2024

Pawnee County-

- Anticipated for 2024

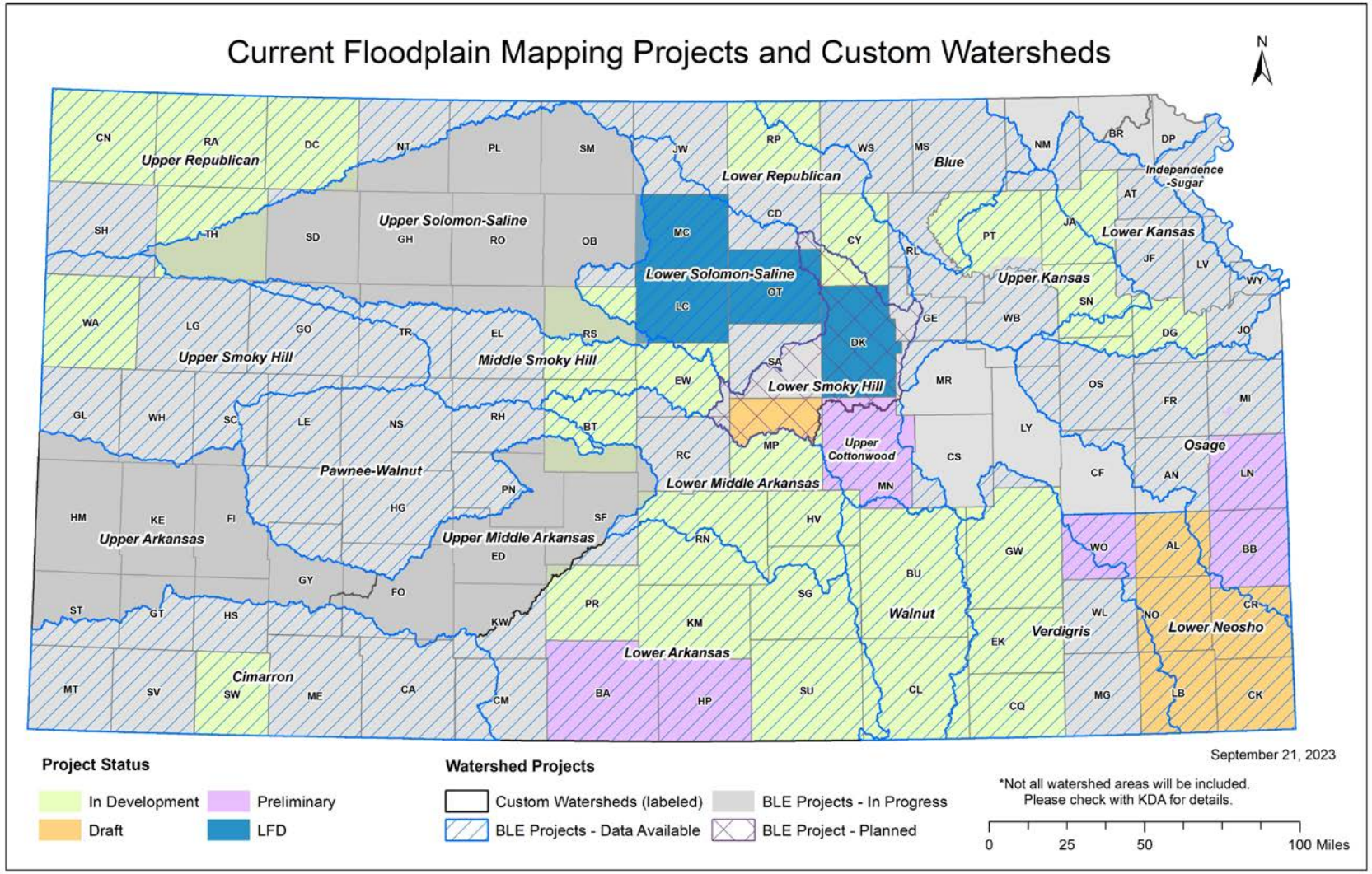
Rush

- Anticipated for 2025

Stafford

- Anticipated for 2025

# We are doing this work across Kansas…

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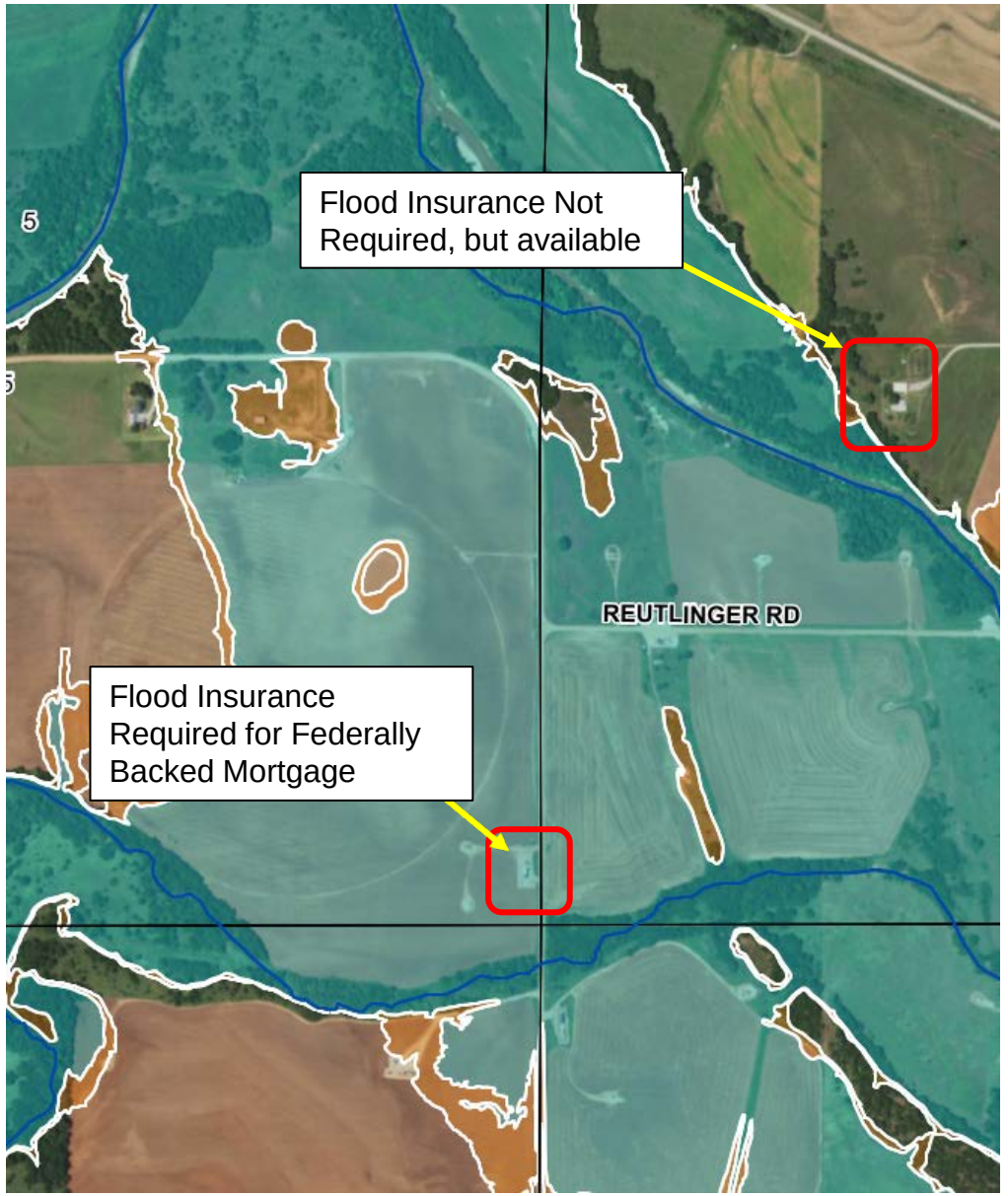
# Participation in the NFIP

- NFIP Participation is voluntary.
  To participate a community must:
  - Adopt a Floodplain Management Ordinance and regulate development in the floodplain
    - The community designates a floodplain administrator, which often have other roles in the community (i.e. city clerk, engineer, planner).
    - The flood zone determines the locations that need to regulated.
  - Adopt a Resolution for Participating in the NFIP
  - Complete the Application for Participation

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# NFIP Participation Requirements

- Adopt and enforce all applicable NFIP regulations
- Require permits for ALL development in the Special Flood Hazard Area (SFHA)
- Obtain proof of compliance with local floodplain management ordinance for all permits
- Maintain Floodplain Management Records
- Helping residents obtain information on flood hazards, floodplain map data, flood insurance and proper construction measures

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# Benefits of joining the NFIP!

- Property owners would be able to insure against flood losses (in or outside of the regulatory SFHA)
- Qualify for federal grants or loans for development
- Qualify for federal disaster assistance for damages caused by a flood
- Adoption of a floodplain management ordinance leads to smart development against flood risk


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# Participation in the National Flood Insurance Program

- Blue = Participates  Red = Not Participating
- Cities of Belpre, Bucklin, Dodge City, Ellinwood, Ensign, Ford, Garfield, Great Bend, Greensburg, Haviland, Hudson, Kinsley, Larned, Lewis, Macksville, Mullinville, Offerle, Pawnee Rock, Radium, Raymond, Seward, Spearville, and Saint John
- Barton, Clark, Edwards, Ford, Gray, Hodgeman, Kiowa, Pawnee, Pratt, Reno, Rice, Rush, and Stafford Counties

# Number of Flood Insurance Policies

- Barton County- 21
  - Ellinwood- 13
  - Great Bend- 9
  - Pawnee Rock- 7
- Ford County- 29
  - Bucklin- 0
  - Dodge- 8
  - Ford City- 0
  - Spearville-NP
- Gray County- NP
  - Ensign - NP
- Hodgeman County- NP
- Kiowa County- NP
  - Greensburg- 1
  - Haviland- NP
  - Mullinville- NP
- Pawnee County- 20
  - Garfield- NP
  - Larned - 0
- Reno County- 57
- Rice County - 12
- Stafford County- NP
  - Hudson- NP
  - Macksville- NP
  - Radium- NP
  - Seward- NP
  - St. John- NP
- Edwards County- NP
  - Belpre- NP
  - Kinsley- 42
  - Lewis- NP
  - Offerle- NP

# Benefits of joining the NFIP!

- Property owners would be able to insure against flood losses
- Qualify for federal grants or loans for development
- Qualify for federal disaster assistance for damages caused by a flood
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# Where We Are Now & What the Early Flood Risk Data is Telling Us

# Base Level Engineering is Complete

- BLE is an engineering approach that provides an initial high-level (or "base line") understanding of flood hazards, with enough information for us to draft initial floodplain designations.

- We're starting to develop and share this initial data because we've learned that the earlier we start partnering with you, the more accurate the map.

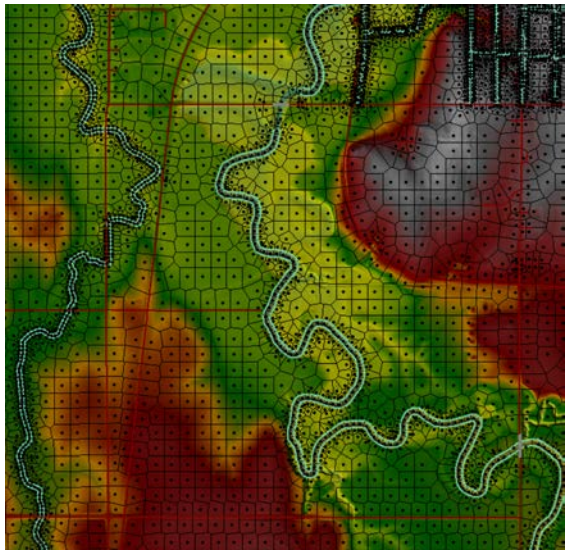
***FLOODPLAIN:*** On the maps we create, the floodplains, also known as Special Flood Hazard Areas (SFHAs), are areas with high flood risk – where a flood of a certain level has a 1-percent chance of happening each year.

# We Use 2D Hydraulic Modeling and LIDAR in our BLE

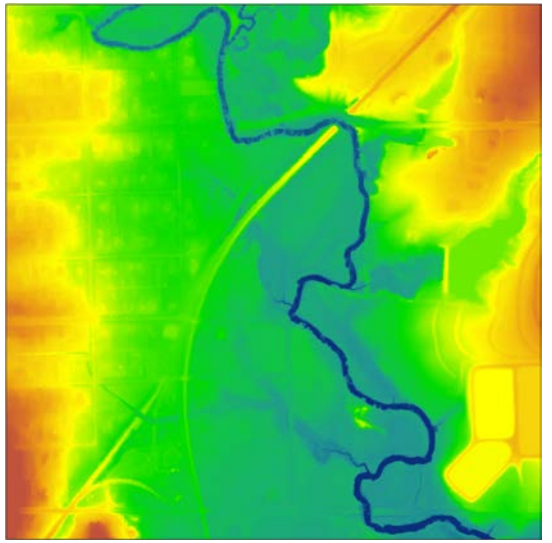
- Your current maps are done in one dimension (1D) and are based on 10-meter Digital Elevation Model

- Two-dimensional (2D) modeling and LIDAR- enhanced maps provide greater resolution and the ability to analyze how water moves across land using elevations and depth grids

2D



LiDAR



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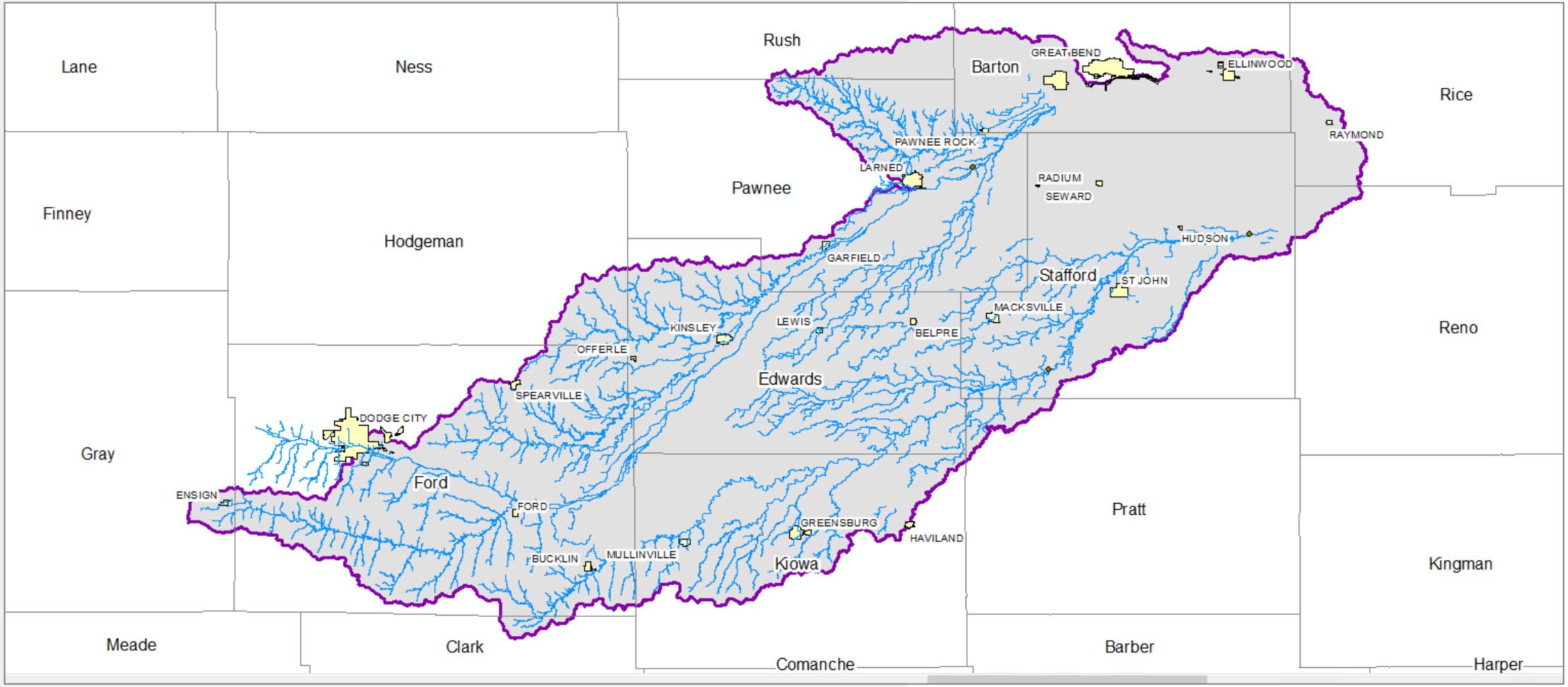
# BLE Study Area




## BLE floodplains are complete for this study area

# Limitations of BLE Modeling

- Hydraulic structures, such as culvert and bridge openings, are not included
- Storm sewer networks in communities are not included
- Levees are not accurately modeled because closure structures are not included into the model to prevent backwater

# Identified Flood Risk Areas

- Sedimentation and debris jams leading to reduced channel capacity
- Shallow flooding areas due to water not being able move
- Lack of defined overflow channels or outlets during large floods
- Levees offer flood protection, but there is also a level of risk.

# Where We Are Now: DISCOVERY

This is one of the most important phases of our work, where we:

- Review the flood risk information together and get your feedback;
- Identify the new data we might need to accurately update your flood risk; and
- Determine, with you, where mitigation (taking steps to reduce risk) makes sense for your community.

# Discovery Report and Map

## Discovery Report

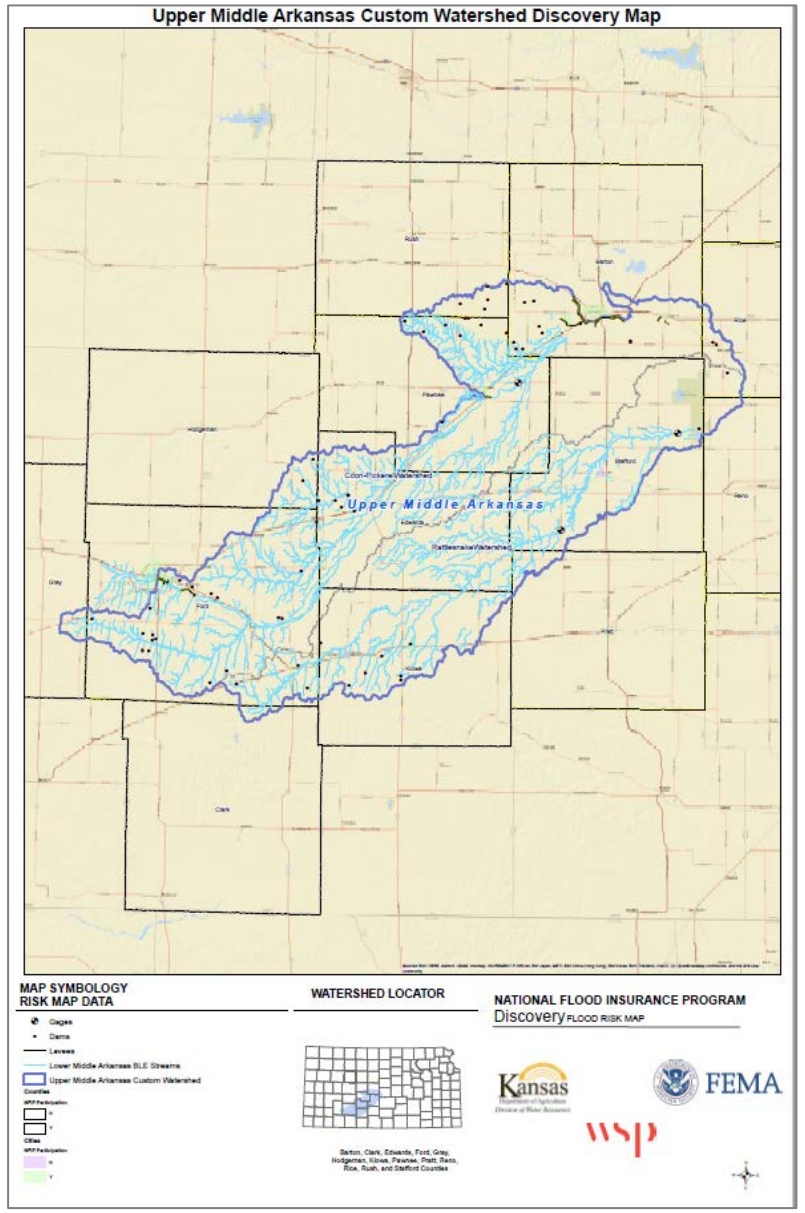
Upper Middle Arkansas Custom Watershed
HUCS 11030004, 11030009

Cities of Belpre, Bucklin, Dodge City, Ellinwood, Ensign, Ford, Garfield, Great Bend, Greensburg, Haviland, Hudson, Kinsley, Larned, Lewis, Macksville, Mullinville, Offerle, Pawnee Rock, Radium, Raymond, Seward, Spearville, and St John

Barton, Clark, Edwards, Ford, Gray, Hodgeman, Kiowa, Pawnee, Pratt, Reno, Rice, Rush, and Stafford Counties

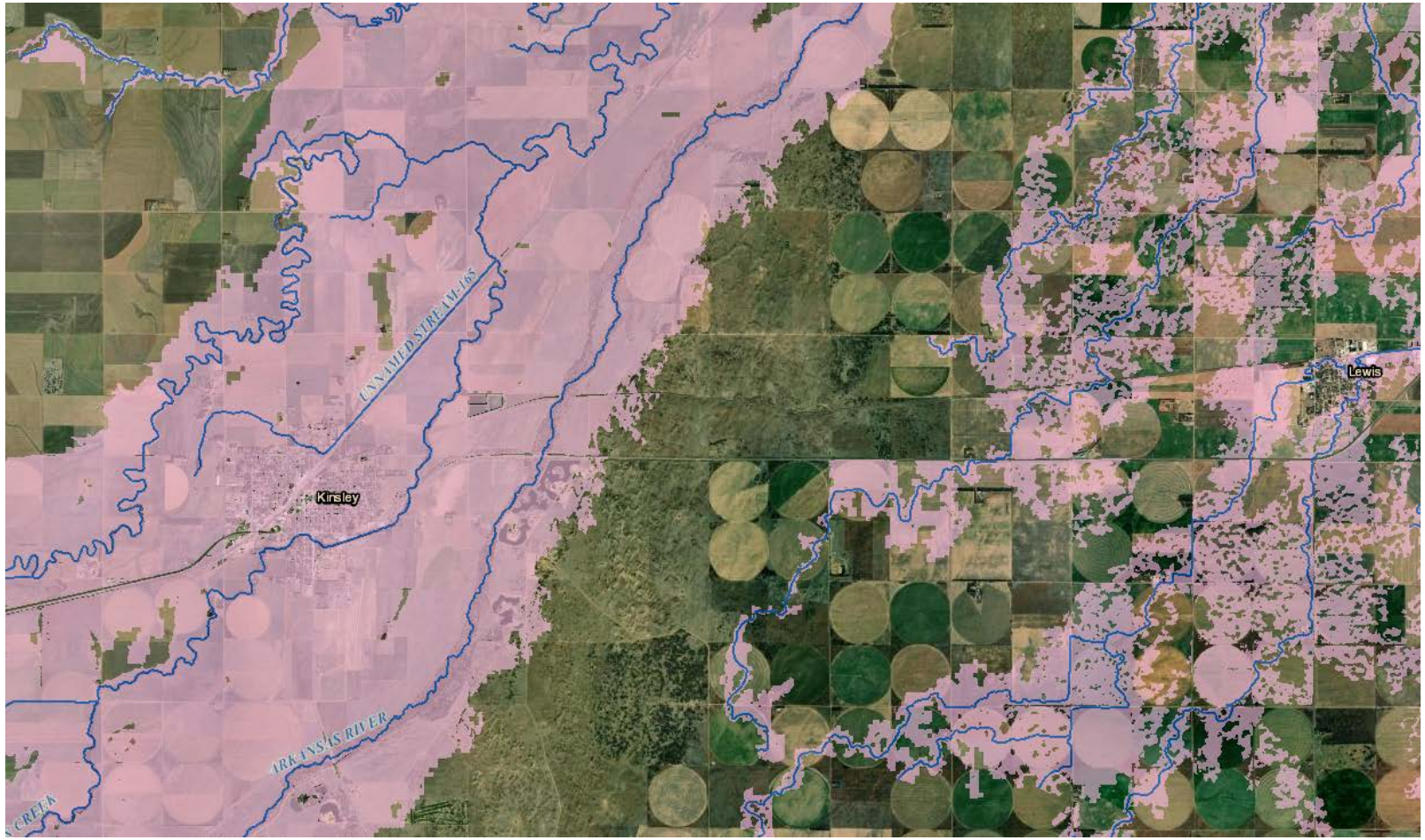
Report Number 01
DRAFT

FEMA



# Draft Floodplains

## BLE Floodplain

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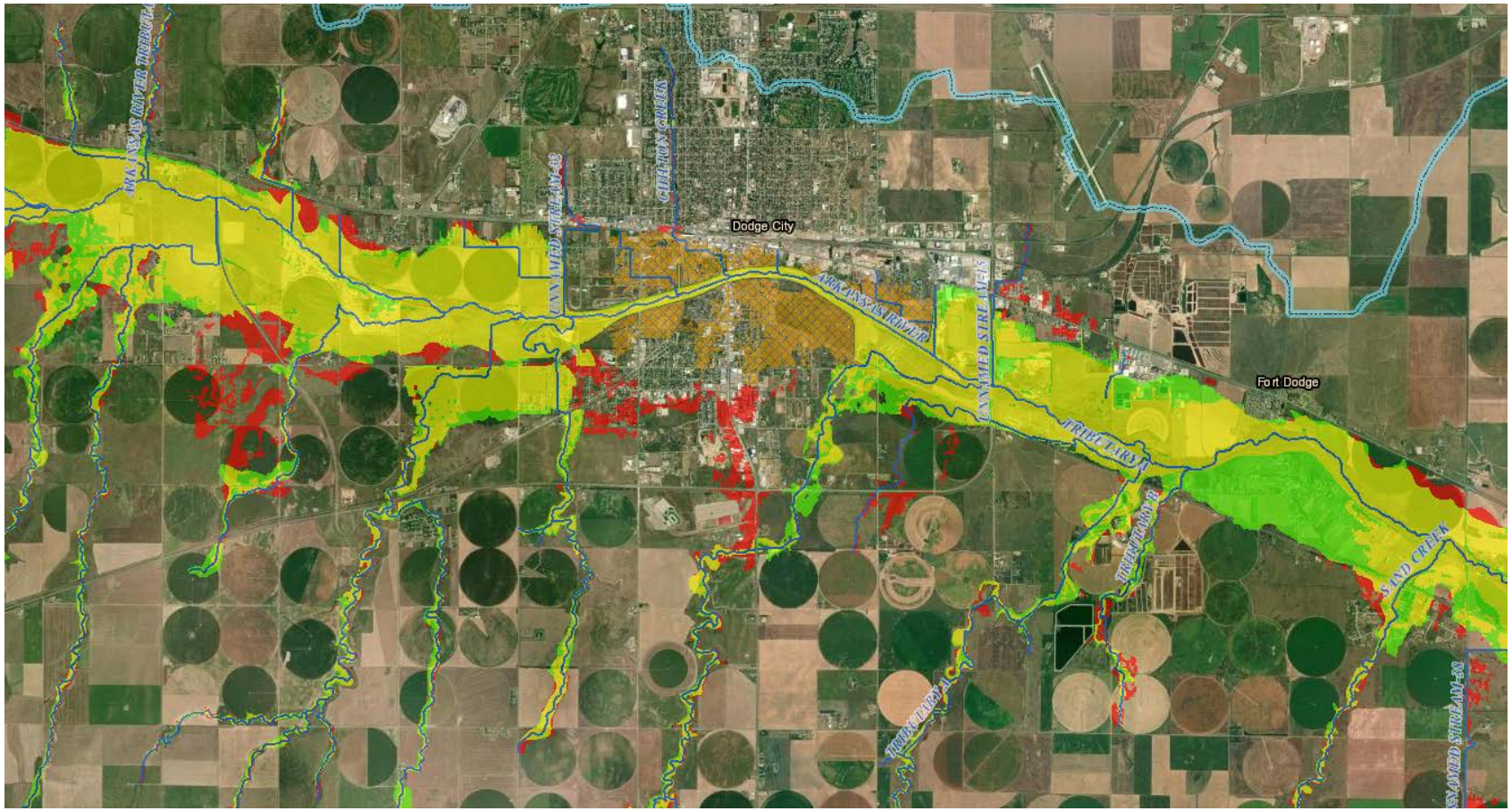
# Changes Since Last Flood Insurance Rate Map (FIRM)

## BLE Floodplain compared to Current Effective Floodplain




**Yellow:** Same

**Red:**
New SFHA

**Green:**
Removed SFHA

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# How We Can Help

“Mitigation Technical Assistance”

# Some Ways We Can Help

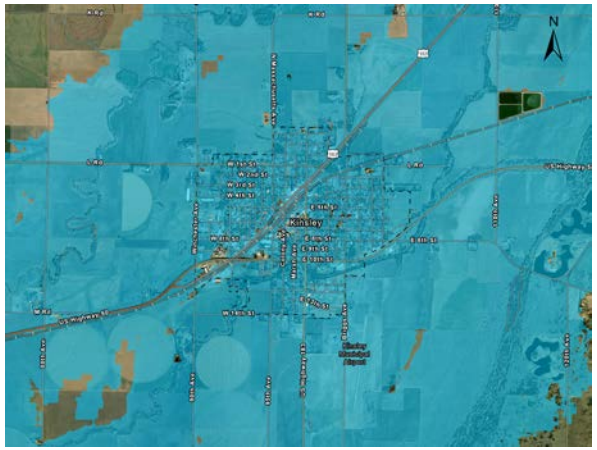
- Provide ideas on how to reduce flooding in trouble spots.
- Provide risk assessments for structures in your community, to help property owners understand the need for flood insurance, or to help you protect important public buildings.
- Use engineering analysis to show you what types of projects could reduce the impacts in floodprone areas.
- Assist with the Benefit-Cost Analysis if you are putting together a grant application.
- Support your participation in the Community Rating System.
- Help you explain flood risk and what it means to your community members.


***You can visit the KDA website for more information, including a link to a fillable request form:***

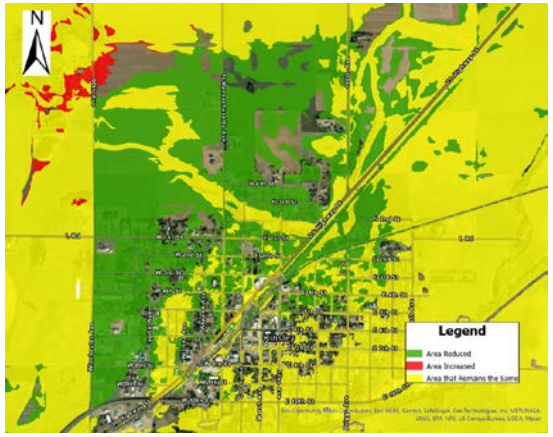
**https://www.agriculture.ks.gov/divisions-programs/dwr/floodplain/mapping/technical-assistance**

# City of Kinsley Technical Assistance Project

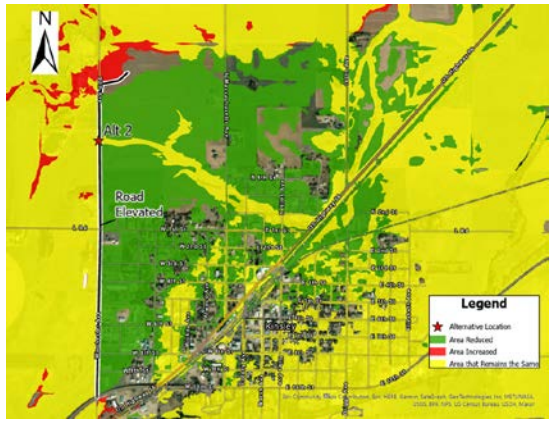
- 2D HEC-RAS modeling to evaluate three mitigation scenarios compared to the 2D BLE study



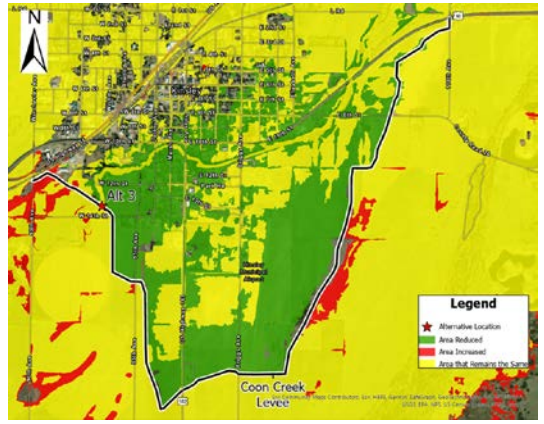
Existing Conditions Model




Alternative 1 – implementation of dry dam located northwest of 20th Avenue and M Road on Little Coon Creek.




Alternative 2 – elevate Winchester Avenue and 90th Avenue from US-50 to approximately 1.3 miles north.




Alternative 3 – levee diverting flow along Coon Creek along US HWY 56 to Kinsley Municipal Airport then back to intersection of US-50 and 110th Ave.

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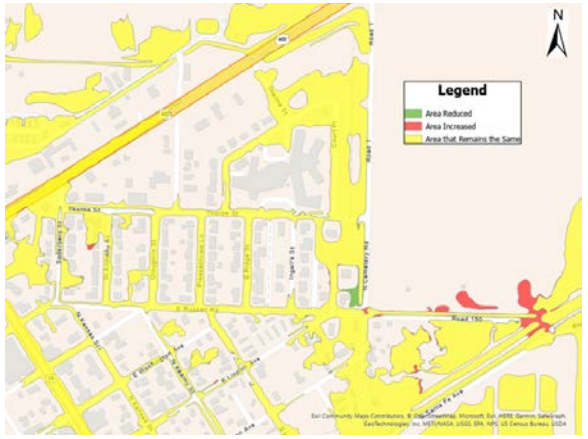
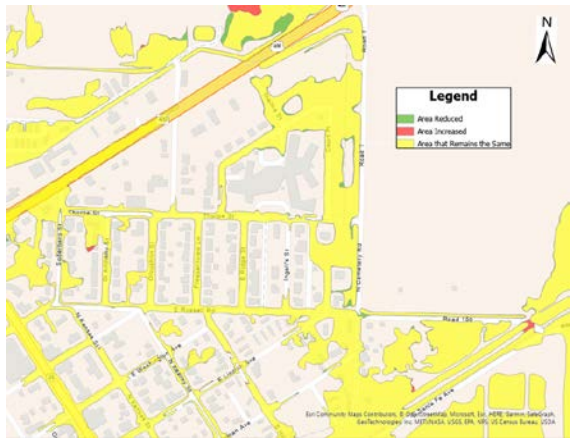
# City of Lakin Technical Assistance Project

- 2D HEC-RAS modeling to evaluate three mitigation scenarios compared to the 2D BLE study

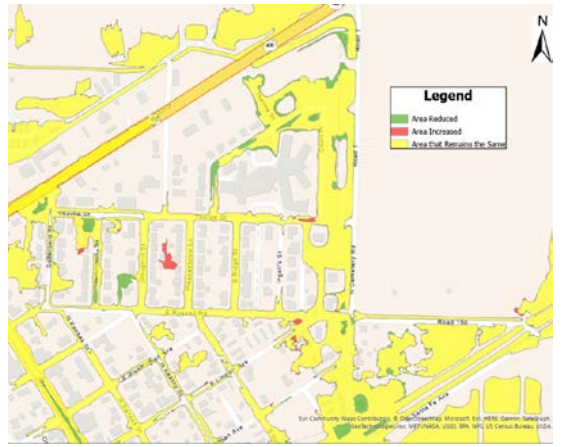
Existing Conditions Model




Alternative 1 – modification of the existing culvert S10, located north of the intersection of Russel Road and North Cemetery Road.




Alternative 2 – adding detention basins west of KS-25 and northwest of the intersection of US-50 and Road T.




Alternative 3 –adding inlets near the intersections of Harolds Place and Court Place and Thorpe Street and Court Place.

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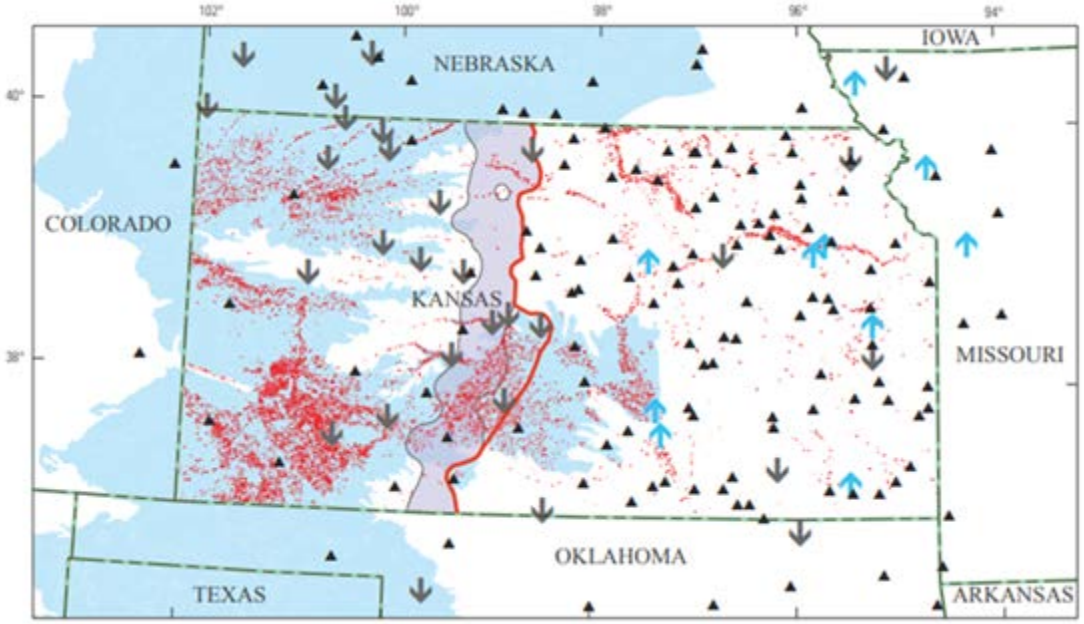
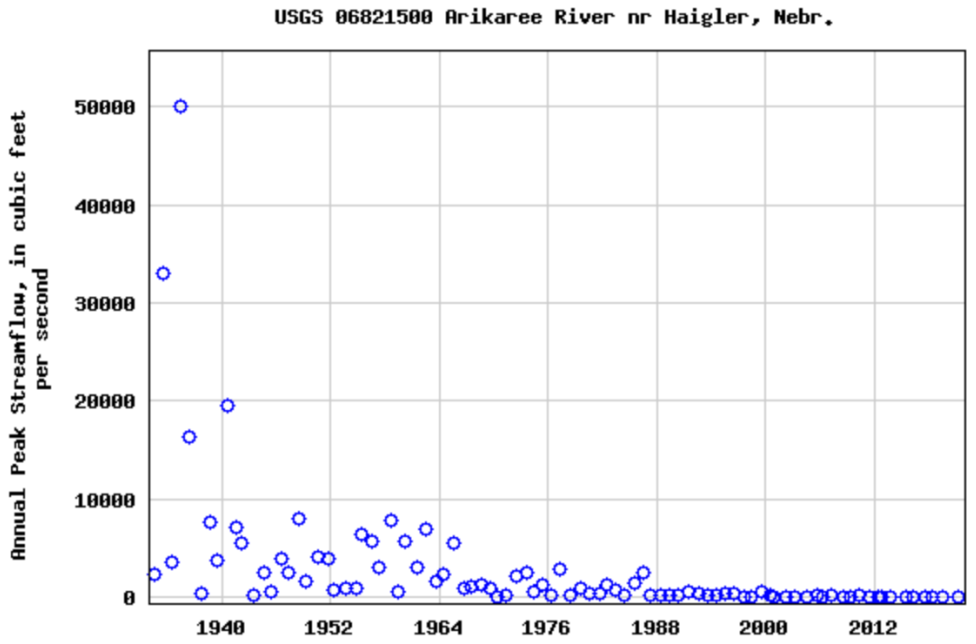
# Technical Assistance Project:
# Western Kansas Hydrology Pilot Study

- Groundwater Irrigation has caused streamflow to decline since 1978
- Challenges encountered due to discrepancies in Model Calibration Data
- Technical Assistance Study performed to analyze hydrology scenarios
  - Mixed Population Gage Analysis
  - Methodology updated to represent streamflow loss



# Preview of the Planned Work

Which We Call Our Data Development Scope

# Data Development Scope

Proposed scope if a county projects moves forward with data development and regulatory maps

**For most of the countywide footprint…**

**Zone A**

- Developed from 2D BLE Models and Mapping updated with Feedback from Discovery
- No Base Flood Elevations (BFEs) on the regulatory map, but available
- Water Surface Elevation and Depth Grids generated
- 2D Zone A BLE is easily scalable to enhanced Zone AE.

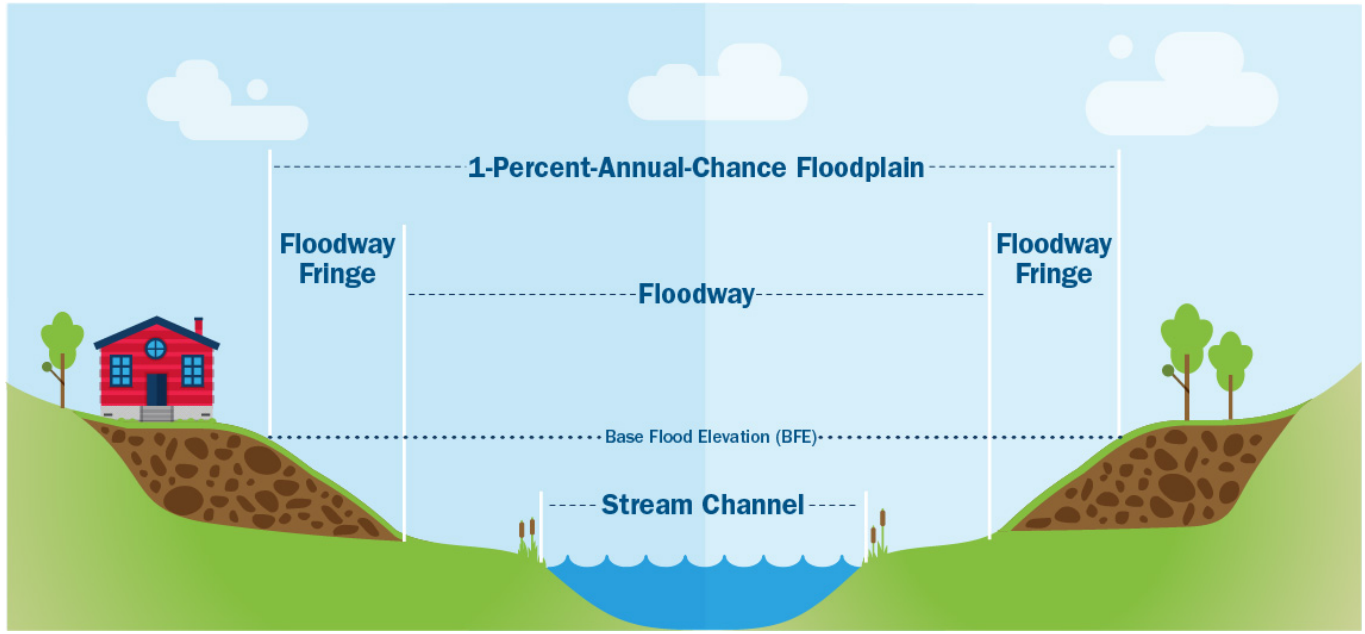
**For specific areas identified as needing more detail…**

**Zone AE**

- Culvert and bridge openings are included in the modeling
- Added detail to breaklines and land cover data in the modeling
- Additional Hydrology Calibration
- May have a floodway
- Base Flood Elevations (BFEs) will be shown on the regulatory map
- Water Surface Elevation and Depth Grids will be generated

# What is a Floodway?

- Zone AE: with or without a floodway
  - If there is a floodway on the current map, the new map must have a floodway
  - If there is not a current floodway, a floodway is optional



# Next Steps and Your Role in the Process

# Project Timeline

**Discovery Meeting:** Today!

- *What data could contribute to making the map as accurate as possible?*
- *Revisit what flood risk reduction steps you are considering and how we can help!*
- *Provide feedback on data development scope, and mapping needs by 10/15/2021*

**Data Development Work:**

- *Edwards County (anticipated for 2024)*
- *Ford County (anticipated for 2025)*
- *Gray County (anticipated for 2024)*
- *Pawnee County (anticipated for 2024)*
- *Rush County (anticipated for 2024)*

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

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# Project Timeline, continued

Once **feedback is received,** there is a public review of the draft maps

- *We'll need your help in getting the word out to your residents*

**Preliminary Map Products**

**Post-Preliminary Processing**

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# STEP ONE: Provide Feedback on the BLE Maps

We want to incorporate your feedback into our work ahead.
This could include:

- Review BLE floodplains and comment
- Review stream extents and comment
- Provide information on community needs or areas of specific concern.
  - Intersections that often flood and stop traffic
  - Drainage problems
  - Parts of town where homes or businesses have flooded

**How?**

- Provide comments directly on the map (we'll show you how in a minute)
- Email this team
- Call one of us!

# STEP TWO: Provide Insight and Data

Provide information that would be useful for our mapping team to be aware of.

- Are there areas of recent construction/development?
- Are there plans for new construction/development?
- Are there tricky areas that may require a closer look?
- Do you have projects underway, related to flooding, that we could help with?
- Do you have information you have about past flooding, such as high water marks?
- Do you have updated Aerial Imagery (We typically use the latest imagery from NAIP)?
- Do you have survey or as-built plan information (culverts, bridge openings, channel geometry)?
- Are there any revision approved for your previous map (Letters of Map Revision or Amendments)?

# STEP THREE: Review Modeling Approach

Provide input on our proposed approach for the Data Development that will inform your regulatory map (also known as your Flood Insurance Rate Map, or FIRM)

- Comment period goes until 1/15/2024 (More time can be provided if needed)

# Key Takeaways

- This process is going to take time.
- Your involvement will help us produce better maps!
  - Get the word out and encourage participation in this project.
  - Review information as it becomes available.

**DON’T HESITATE TO CALL; WE ARE AVAILABLE.**

# Stay Informed

- Email List
  - Get us names, addresses, and titles
  - Will be main source of project updates

- Project Updates
  - When important milestones are reached
  - When action is necessary (reminders)

- Meetings
  - Five planned meetings
    - **For BLE/Discovery:** Kickoff (**DONE**), Discovery Meeting (**Today!)**
    - **For Regulatory Updates:** Flood Risk Review, Open House, Post-Preliminary CCO meeting
  - Others, as needed

# Resources and Contact Information

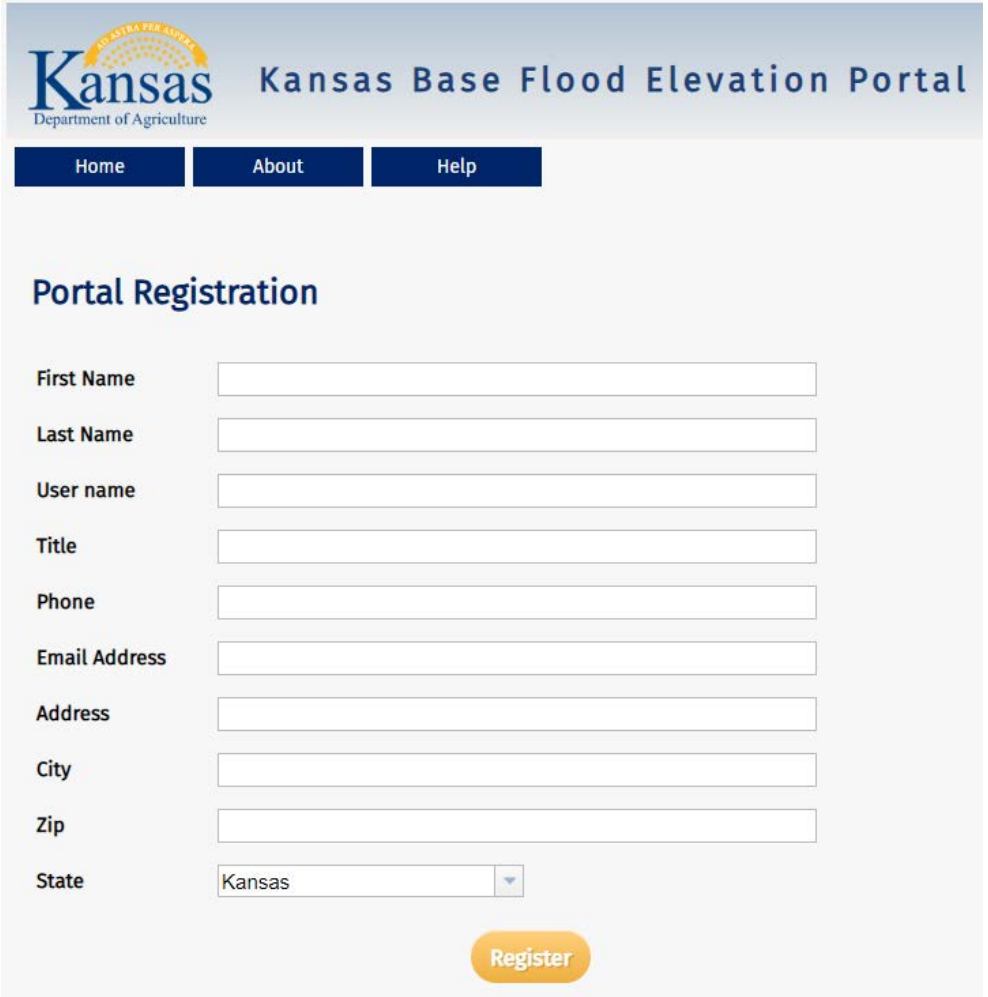
# Online Project Information

- **Project Website**
  - Scoping Maps, Project Timeline, Meeting Presentations, Newsletters, Technical Reports, Web Review Map
  - https://agriculture.ks.gov/divisions-programs/dwr/floodplain/mapping/mapping-projects/lists/mapping-projects/upper-middle-arkansas-custom-watershed
  - **Web Review Map**
  - Review of BLE data
  - https://gis2.kda.ks.gov/gis/upper_middle_ark/
    - This link will not be public facing until the project has been through Data Development
- **Story Maps**
  - Project Info
  - “Floodplain Current:” Mapping Process ‘Nuts and Bolts’

# Base Flood Elevation Portal

For Zone A floodplains, you can request BFE data. Keep in mind, BLE data is subject to change.

https://maps.kgs.ku.edu/fpm_bfe/login.cfm



# KDA Contact Information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GIS Manager

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Project Manager

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# Any Questions?

# Interactive Map Review and Discussion

**Web Map Link:**
https://gis2.kda.ks.gov/gis/upper_middle_ark/

# Where We Plan to Update Your Map



***Edwards County 2024 Proposed Mapping Updates***

## Scoped Studies

**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 Enhanced Zone A - Excess Rainfall on Grid**

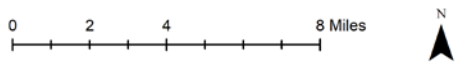
New Enhanced Zone A studies will be developed for these streams using 2D "excess rainfall-on grid" hydrology and 2D HEC-RAS hydraulics. Field measured structure data will be incorporated into the modeling.

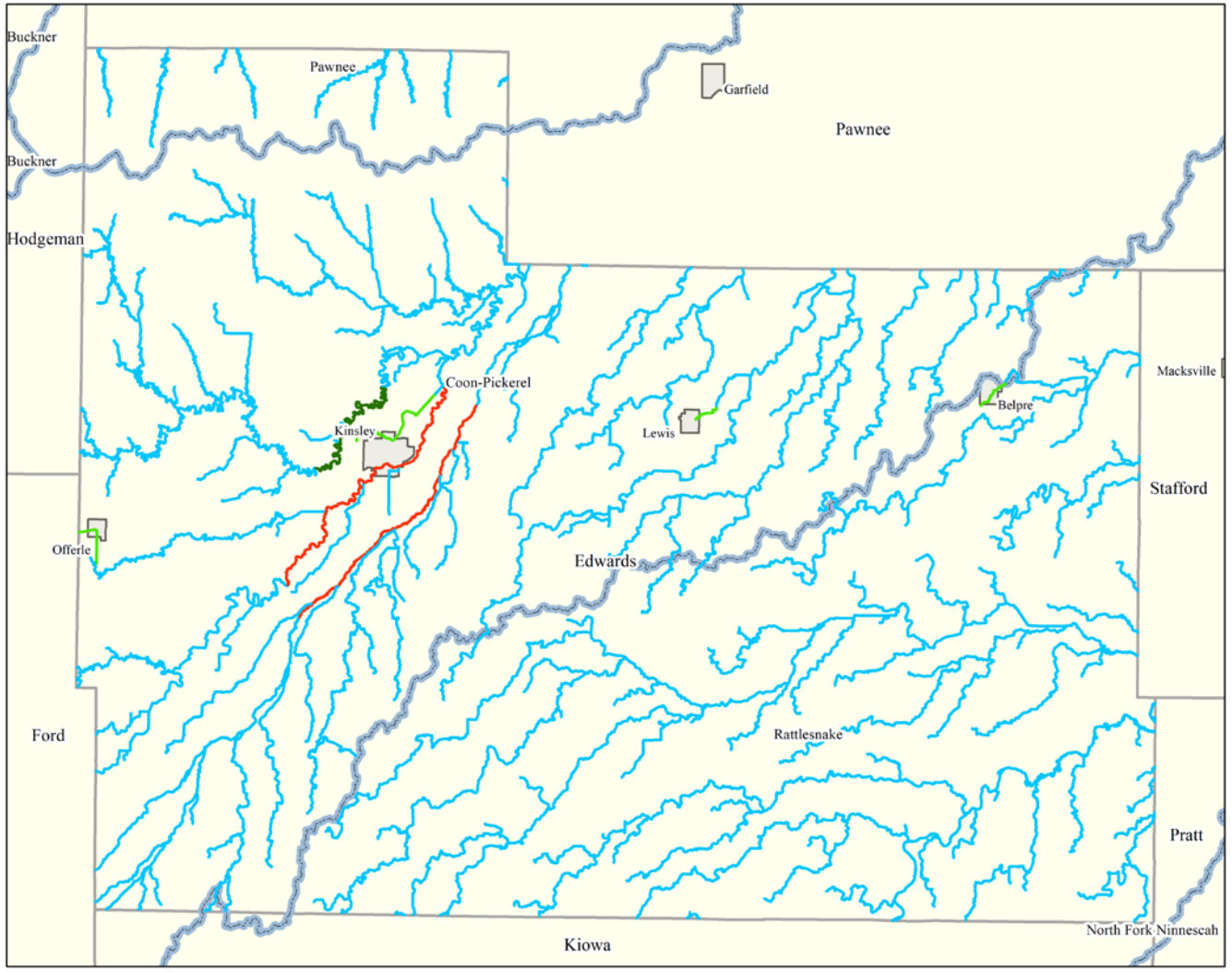
**New Zone AE with Floodway - HEC-HMS**

New Zone AE studies will be developed for these streams using 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.

**New Zone AE without Floodway - HEC-HMS**

New Zone AE studies will be developed for these streams using 2D HEC-RAS hydraulics and hydrology calibrated to HEC-HMS model flows. Floodways will NOT be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.



# Where We Plan to Update Your Map



***Ford County 2025 Proposed Mapping Updates***

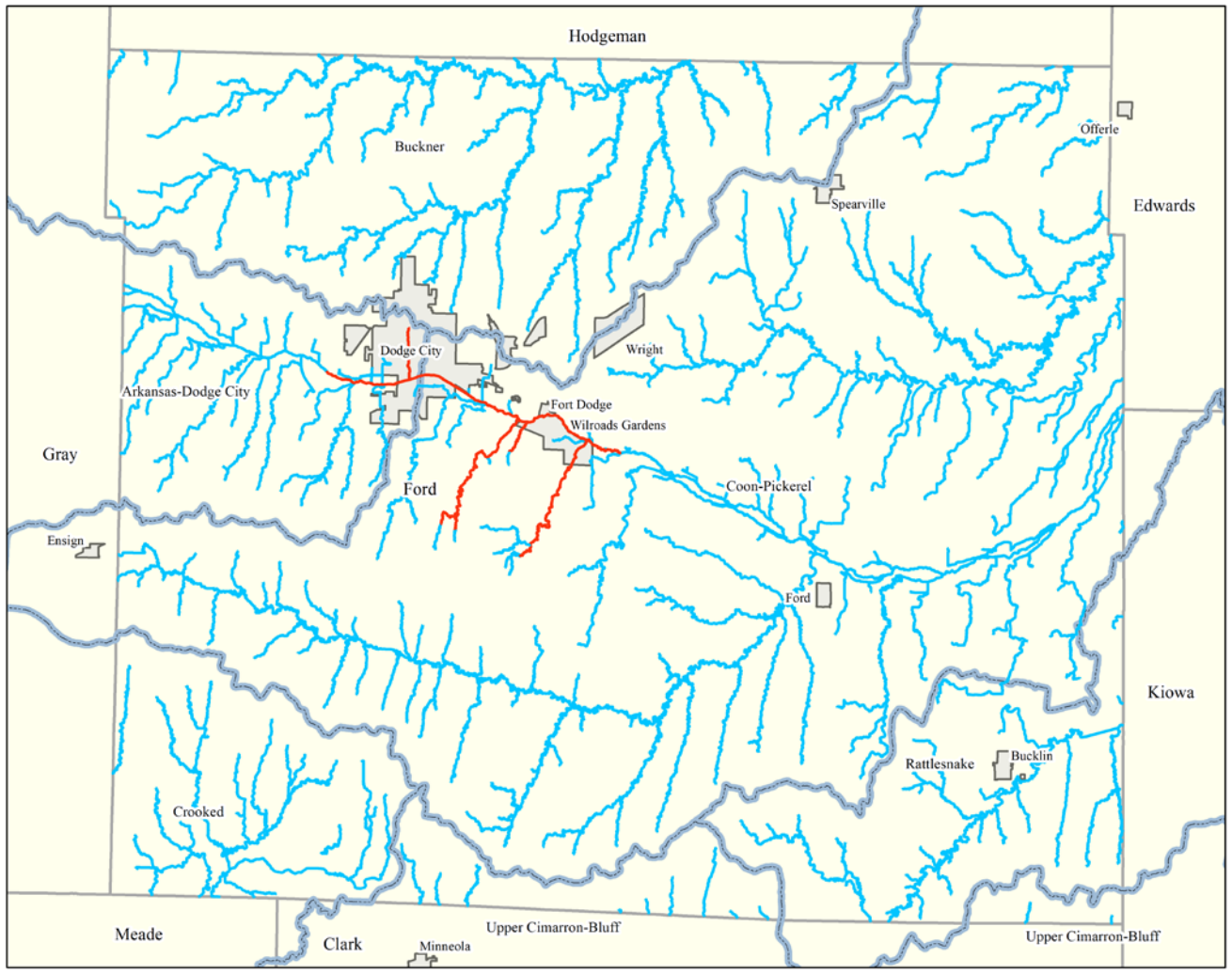
## Scoped Studies

**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 AE with Floodway - HEC-HMS**

New Zone AE studies will be developed for these streams using 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.



# Where We Plan to Update Your Map



***Gray County 2024 Proposed Mapping Updates***

## Scoped Studies

**New Zone A - Excess Rainfall on Grid**

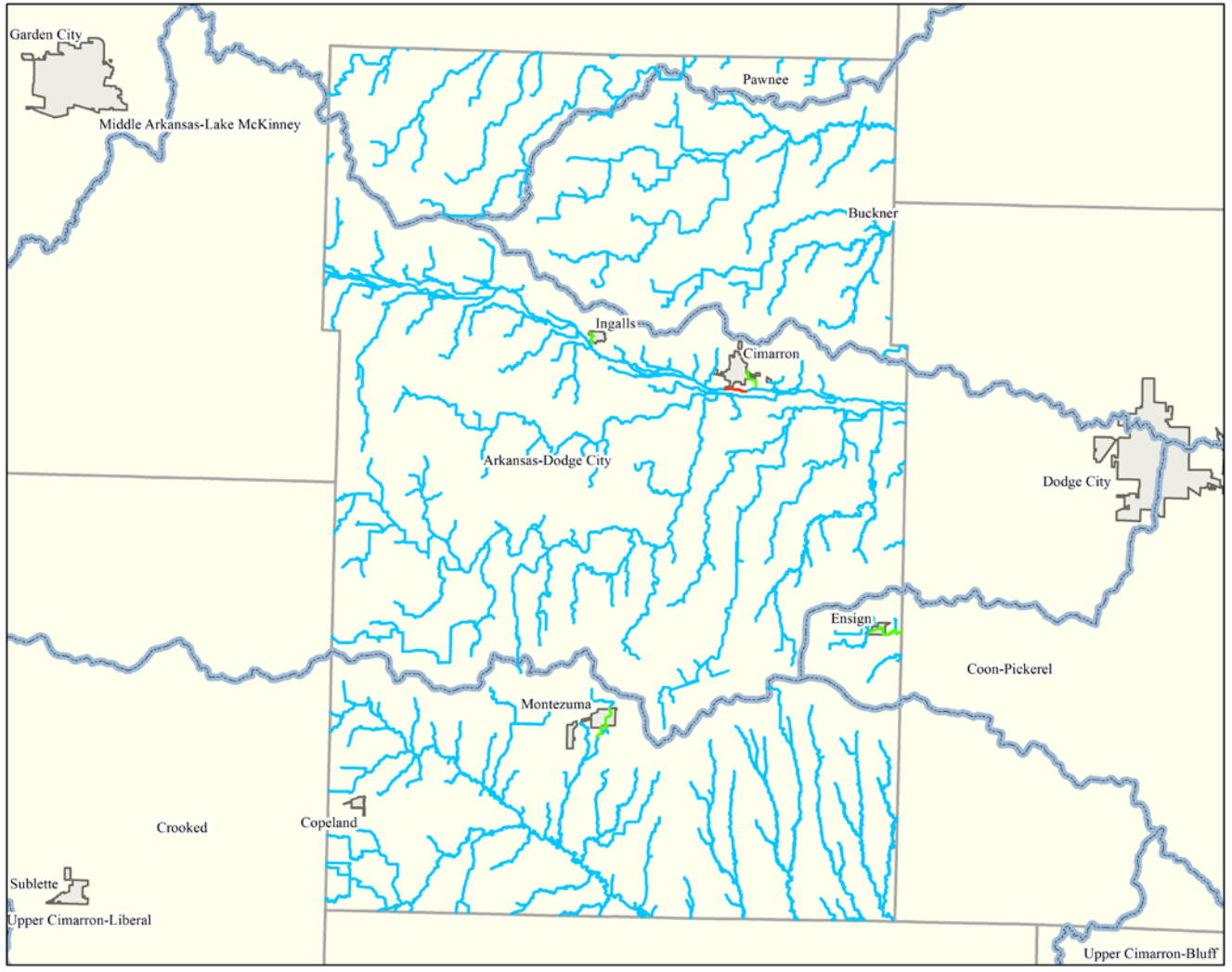
New Zone A studies will be developed for these streams using 2D "excess rainfall-on grid" hydrology and 2D Hec-Ras hydraulics.

**New Zone AE with Floodway - HEC-HMS**

New Zone AE studies will be developed for these streams using 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.

**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.




0 3 6 12 Miles

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# Where We Plan to Update Your Map



***Pawnee County 2024 Proposed Mapping Updates***

## Scoped Studies

**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 AE with Floodway - HEC-HMS**

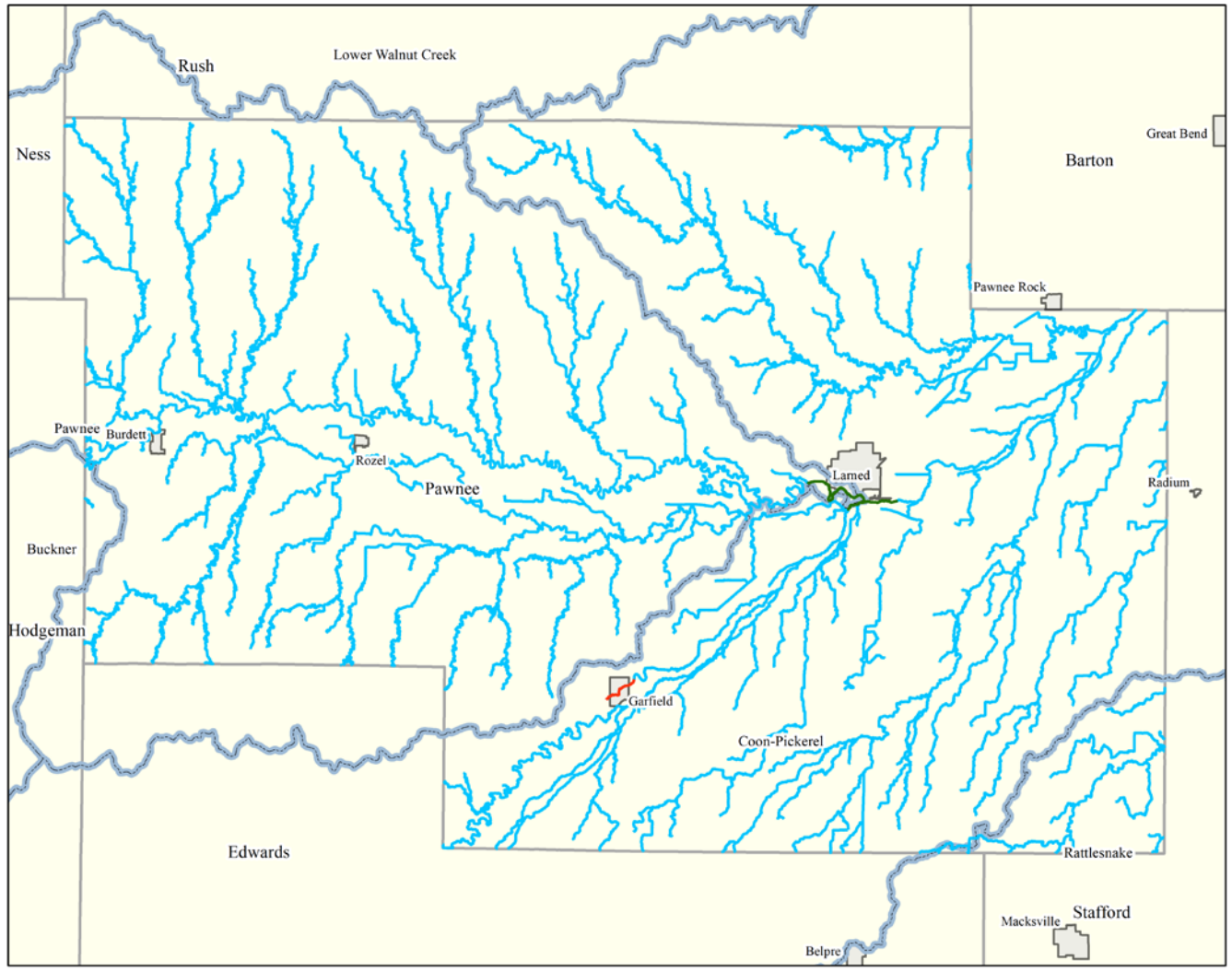
New Zone AE studies will be developed for these streams using 2D HEC-RAS hydraulics and hydrology calibrated to HEC-HMS model flows. Floodways will be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.

**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 Zone AE without Floodway - HEC-HMS**

New Zone AE studies will be developed for these streams using 2D HEC-RAS hydraulics and hydrology calibrated to HEC-HMS model flows. Floodways will NOT be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.



# Where We Plan to Update Your Map



***Rush County 2024 Proposed Mapping Updates***

## Scoped Studies

**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 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.