# Lower Middle Arkansas Custom Watershed Discovery Meeting

***January 12, 2021***

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

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*Thank you for joining us today!*

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

# 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 Joanna Rohlf or email *Joanna.Rohlf@ks.gov*.
- We’ll be recording this webinar for those who aren’t able to attend today.

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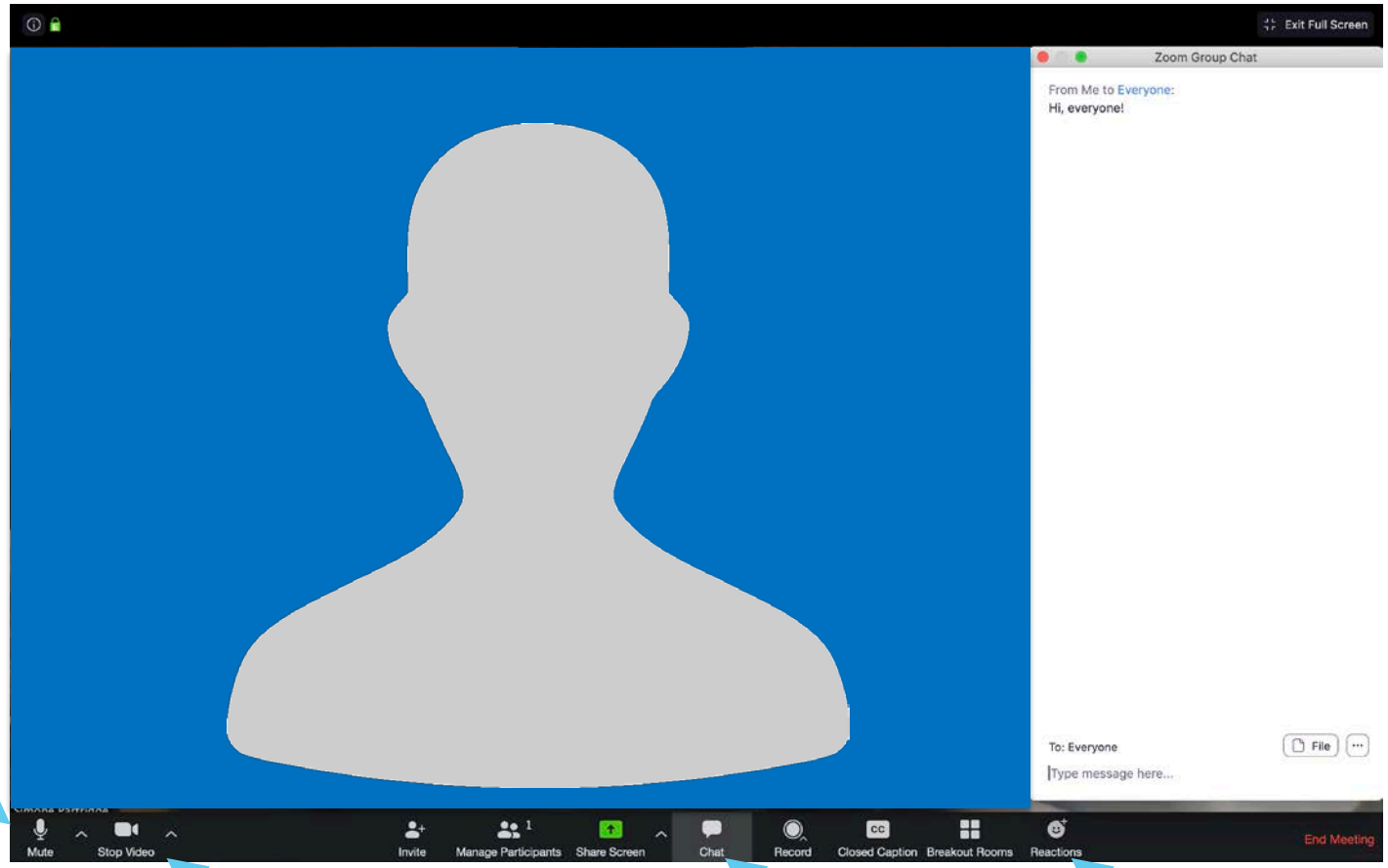
# Zoom Features




***Mute / Unmute***

***Start your Video***

***Use the Chat Feature***

***Reactions***

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# Intros


## Kansas Department of Agriculture

Tara Lanzrath, *CFM Floodplain Mapping Coordinator*

Joanna Rohlf, *CFM Floodplain Mapping Specialist*

William Pace, *CFM Floodplain Mapping Specialist*

Steve Samuelson, *CFM State NFIP Coordinator*

## Wood Environment & Infrastructure Solutions

Joe File, *PE, CFM Senior Associate/Program Manager*

Maria Neeland, *PE, CFM Project Manager*

## FEMA Region VII

Andy Megrail, *Regional Project Officer*

# Today's Goals

| | |
|---|---|
| Review | Review WHY WE DO THIS WORK in the first place |
| Update | Update you on WHAT WE'VE LEARNED to date |
| 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. |

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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
  - Region E: Barton and Stafford
  - Region G: Harvey, Marion, McPherson, Rice, Reno, and Sedgwick
  - Region F: Ellsworth

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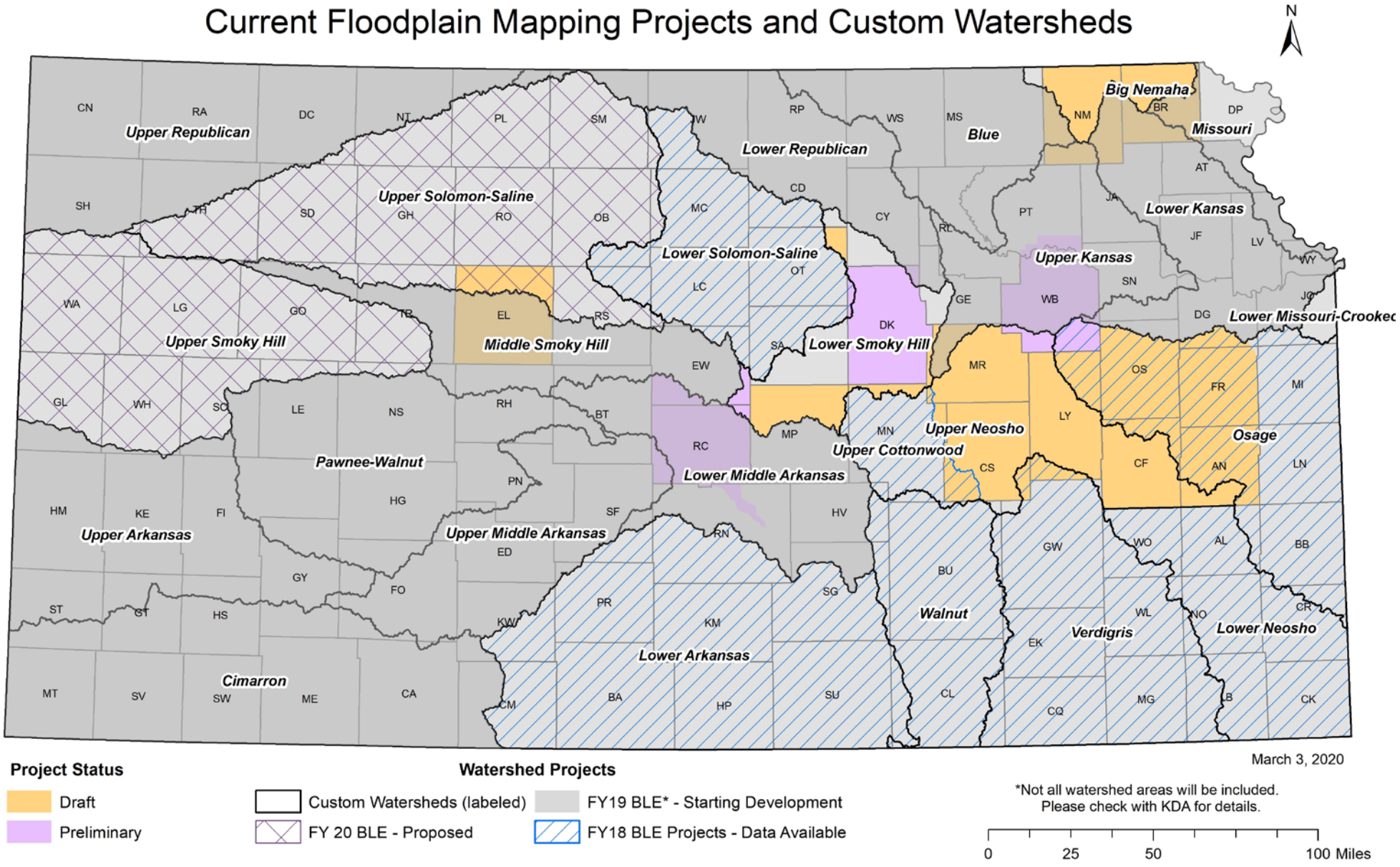
***We Can Help with Technical Assistance!***

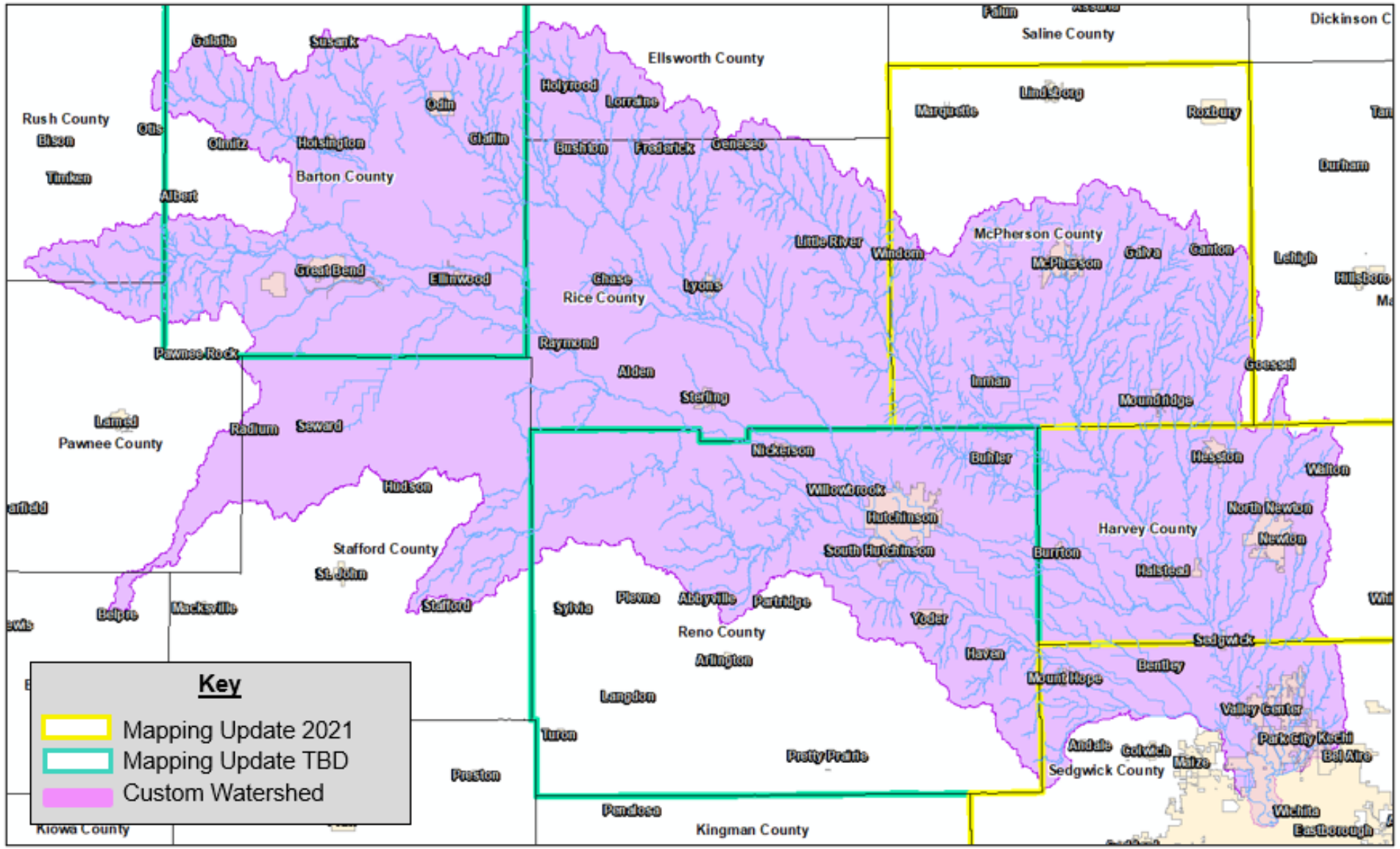
# We are doing this work across Kansas…



# Where We Plan to Update Your Map



## Lower Middle Arkansas Custom Watershed



# What We've Learned to Date

# Identified Flood Risk Areas

- Slow moving water in flat terrain leads to sedimentation and debris jams leading to reduced channel capacity which can be a significant concern
- Shallow flooding areas due to water not being able move
- Lack of defined overflow channels or outlets during large floods
  - Nickerson
  - Sterling
  - Ellinwood
  - Hoisington
  - Etc.
- Levees
  - Reno County/Hutchinson/South Hutchinson/Willowbrook
  - Halstead
  - Great Bend
  - Wichita
  - Others

# Participation in the National Flood Insurance Program

- Blue = Participates  Red = Not Participating

- Cities of Abbyville, Alden, Bel Aire, Bentley, Buhler, Burrton, Bushton, Canton, Chase, Claflin, Frederick, Galva, Geneseo, Halstead, Haven, Hesston, Hoisington, Hutchinson, Inman, Kechi, Little River, Lyons, Maize, McPherson, Moundridge, Mount Hope, Newton, Nickerson, North Newton, Odin, Olmitz, Park City, Sedgwick, South Hutchinson, Stafford, Sterling, Susank, Valley Center, Walton, Wichita, Willowbrook, Windom, Yoder

- Barton, Ellsworth, Harvey, McPherson, Reno, Rice, Sedgwick, Stafford Counties

# Number of Flood Insurance Policies

- Barton County – 45
  - Albert – 16
  - Ellinwood – 19
  - Great Bend – 12
  - Hoisington – 10
  - Pawnee Rock – 13
- Ellsworth County – 4
  - Ellsworth - 23
  - Holyrood – 1
- Harvey County – 71
  - Halstead – 2
  - Hesston – 9
  - Newton – 98
  - Sedgwick – 23
  - North Newton - 4
- McPherson County – 51
  - Lindsborg – 20
  - McPherson – 50
  - Moundridge – 6
  - Galva – 4
- Reno County – 116
  - Hutchinson – 30
  - Nickerson – 35
  - Willowbrook – 2
  - Arlington – 6
  - Buhler – 9
  - South Hutch – 8
  - Pretty Prairie - 12
- Rice County - 35
  - Little River – 1
  - Lyons – 7
  - Raymond – 1
  - Sterling – 25
- Sedgwick County – 222
  - Andale – 1
  - Derby – 105
  - Haysville – 25
  - Mount Hope – 1
  - Mulvane – 95
  - Valley Center – 61
  - Wichita - 804
- Sedgwick County – cont.
  - Bentley – 2
  - Kechi – 14
  - Clearwater – 1
  - Colwich – 8
  - Garden Plain – 5
  - Goddard – 2
  - Maize – 9
  - Bel Aire – 9
  - Park City - 10

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# Discovery Report and Map

## Discovery Report

Lower Middle Arkansas Watershed
HUCS 11030010, 11030011, 11030012

Cities of Abbyville, Alden, Bel Aire, Bentley, Buhler, Burrton, Bushton, Canton, Chase, Claflin, Frederick, Galva, Geneseo, Halstead, Haven, Hesston, Hoisington, Hutchinson, Inman, Kechi, Little River, Lyons, Maize, McPherson, Moundridge, Mount Hope, Newton, Nickerson, North Newton, Odin, Olmitz, Park City, Sedgwick, South Hutchinson, Stafford, Sterling, Susank, Valley Center, Walton, Wichita, Willowbrook, Windom, Yoder

Barton, Ellsworth, Harvey, Marion, McPherson, Reno, Rice, Rush, Sedgwick, Stafford Counties

Report Number 01
DRAFT

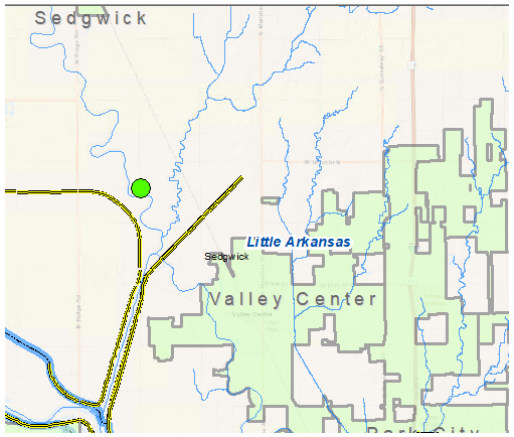
FEMA

# Repetitive Loss Structures

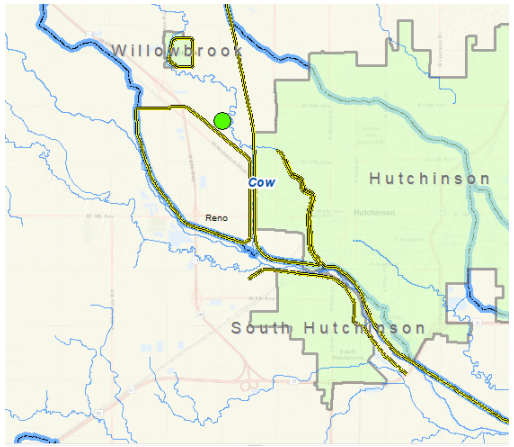
Insurable buildings for which the NFIP paid 2 or more claims of more than $1,000 in a 10-year period. There are two clusters in this area.

- One cluster in Sedgwick County and one cluster in Reno county

*NOTE: if you have an area where structures have been repeatedly damaged, we want to know! It's worth taking a closer look, and we might be able to help.*




In Sedgwick County




In Reno County

Repetitive Loss Clusters

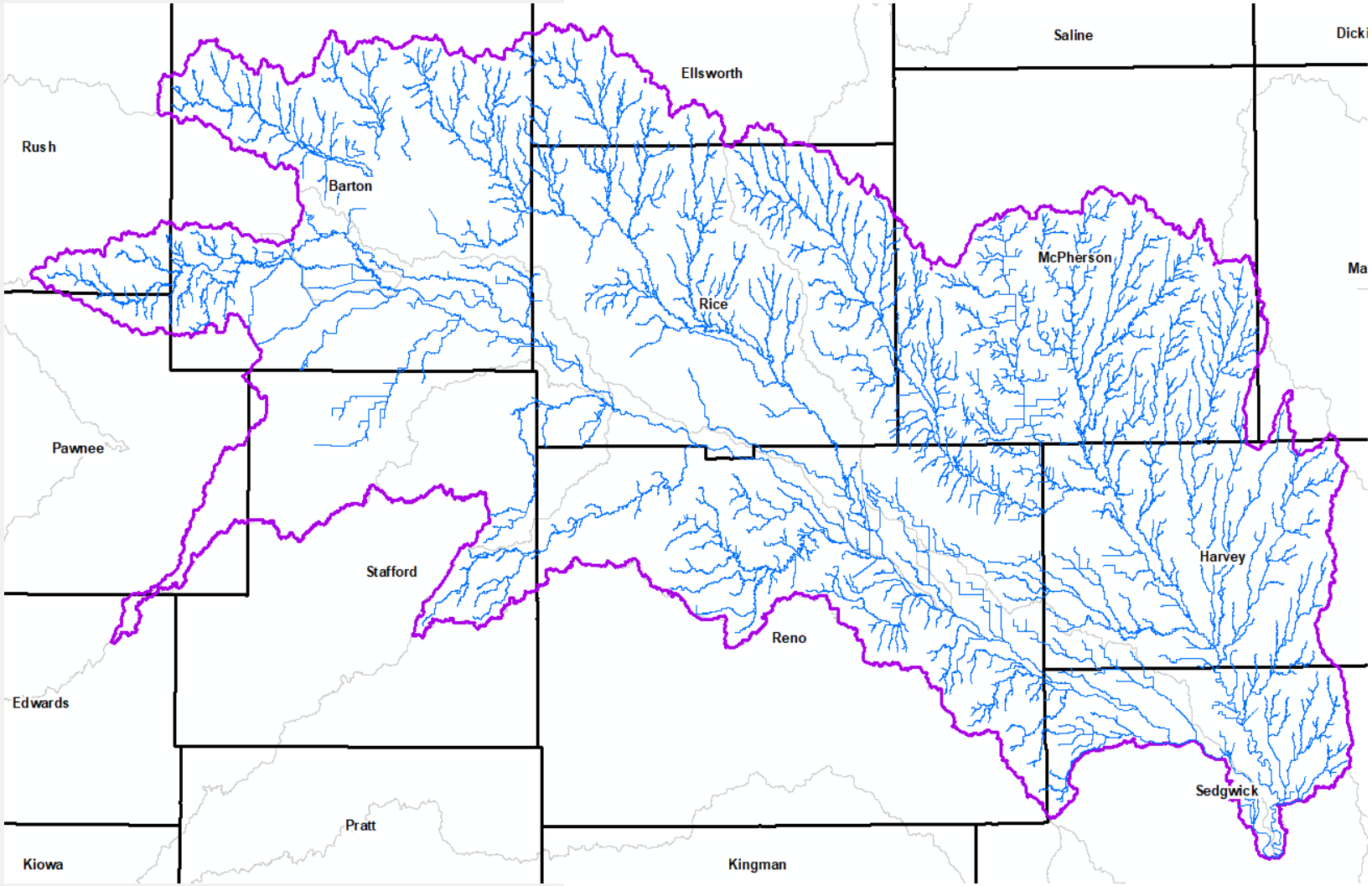
# What the early data is telling us about your flood risk

- Results from our initial Base Level Engineering (BLE)
  - 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.
  - Unfortunately, BLE has limitations around levees. While some of the information can be useful, the floodplains are not representative of reality.

***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.

# BLE Study Area

— Study Lines

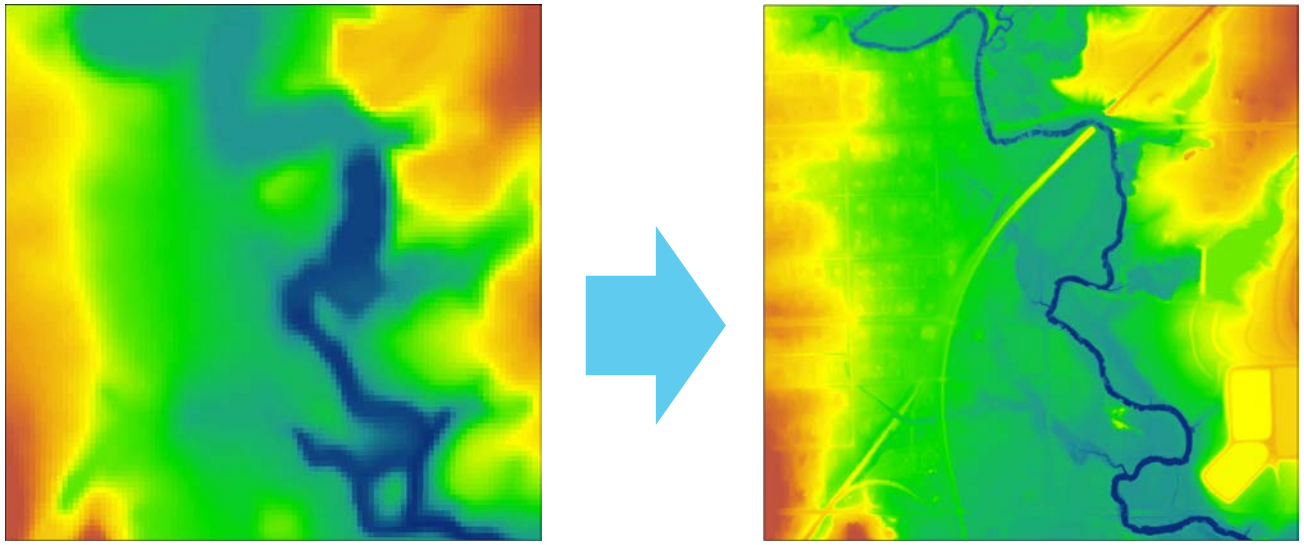



***BLE floodplains are complete for this study area**

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

- Your current maps are done in one dimension (1D) and are based on a 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



**10m Digital Elevation** **LiDAR**

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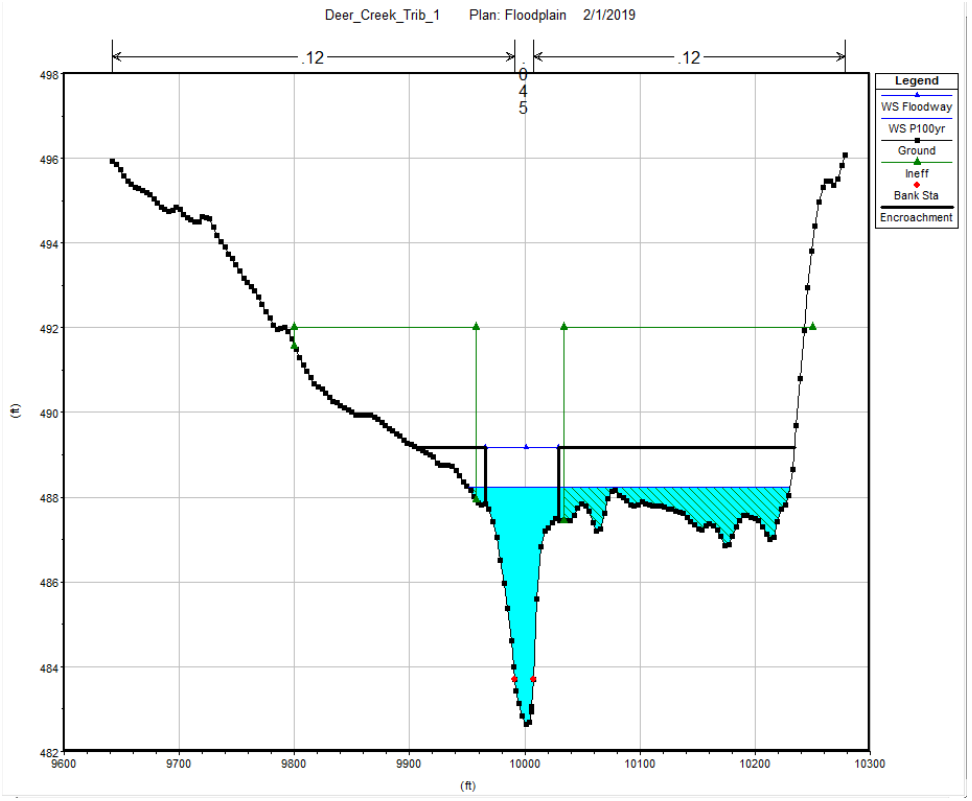
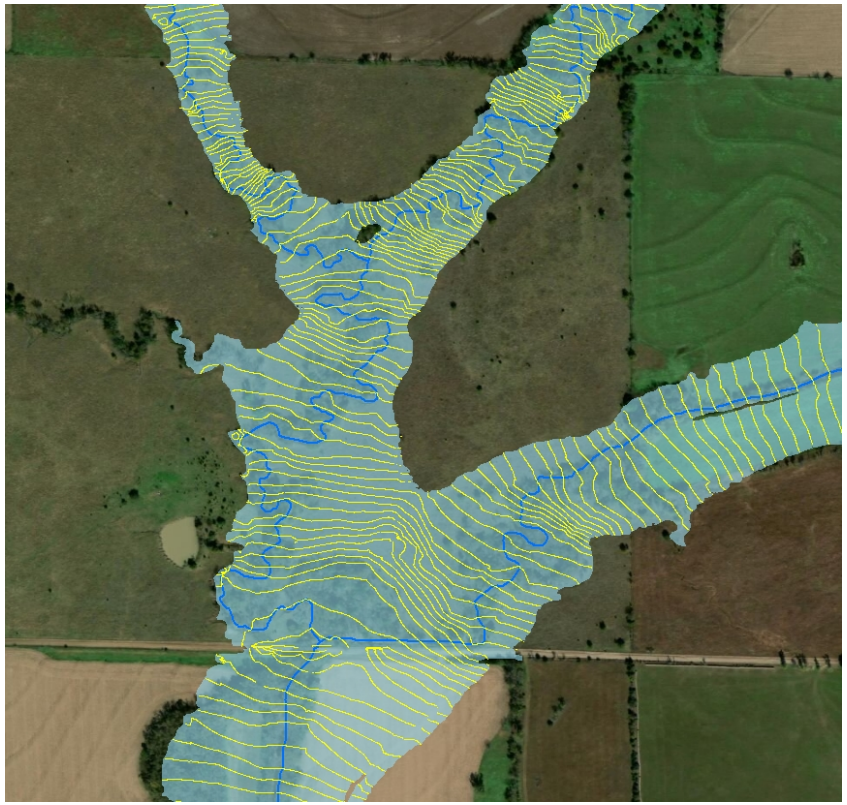
# More precise data gives you more information about flood risk



# Key Takeaways for Base Level Engineering

1. It uses highly advanced engineering techniques
2. It provides early insight into community flood risk
3. It's an important step in our partnership to get the data right

# Where We Are Now & What the Early Flood Risk Data is Telling Us

# 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: Information You Can Provide

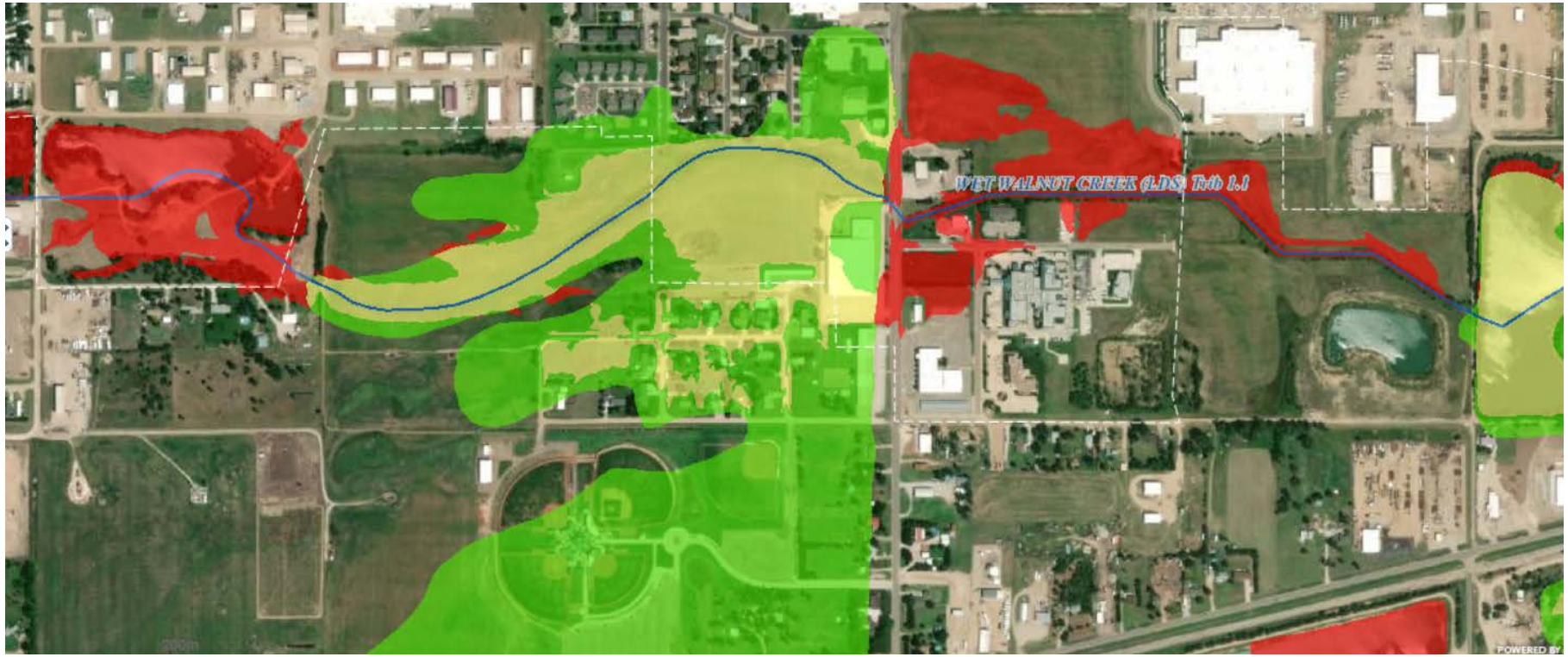
- Information you have about past flooding, including high water marks.
- Updated aerial imagery
  - We typically use the latest imagery from the National Agriculture Imagery Program
- Survey or as-built plan information
  - Bridge or culvert openings
  - Channel information
- Any revisions approved for your previous map
  - Letters of Map Revision or Amendments (LOMRs/LOMAs)

# Draft Floodplain Review

- As we review your BLE Data, we want to hear from you!
- Where are you experiencing flooding?
  - Intersections that often flood and stop traffic?
  - Drainage areas that cause problems?
  - Any parts of town where homes or businesses have flooded?
- Are there areas of recent construction/development? Or are there are plans to build?
- Any tricky areas to take a closer look at?
- Do you have projects underway, related to flooding, that we could help with?

# Draft Floodplains & Changes Since Last Flood Insurance Rate Map (FIRM)

## Great Bend BLE Floodplain compared to current effective



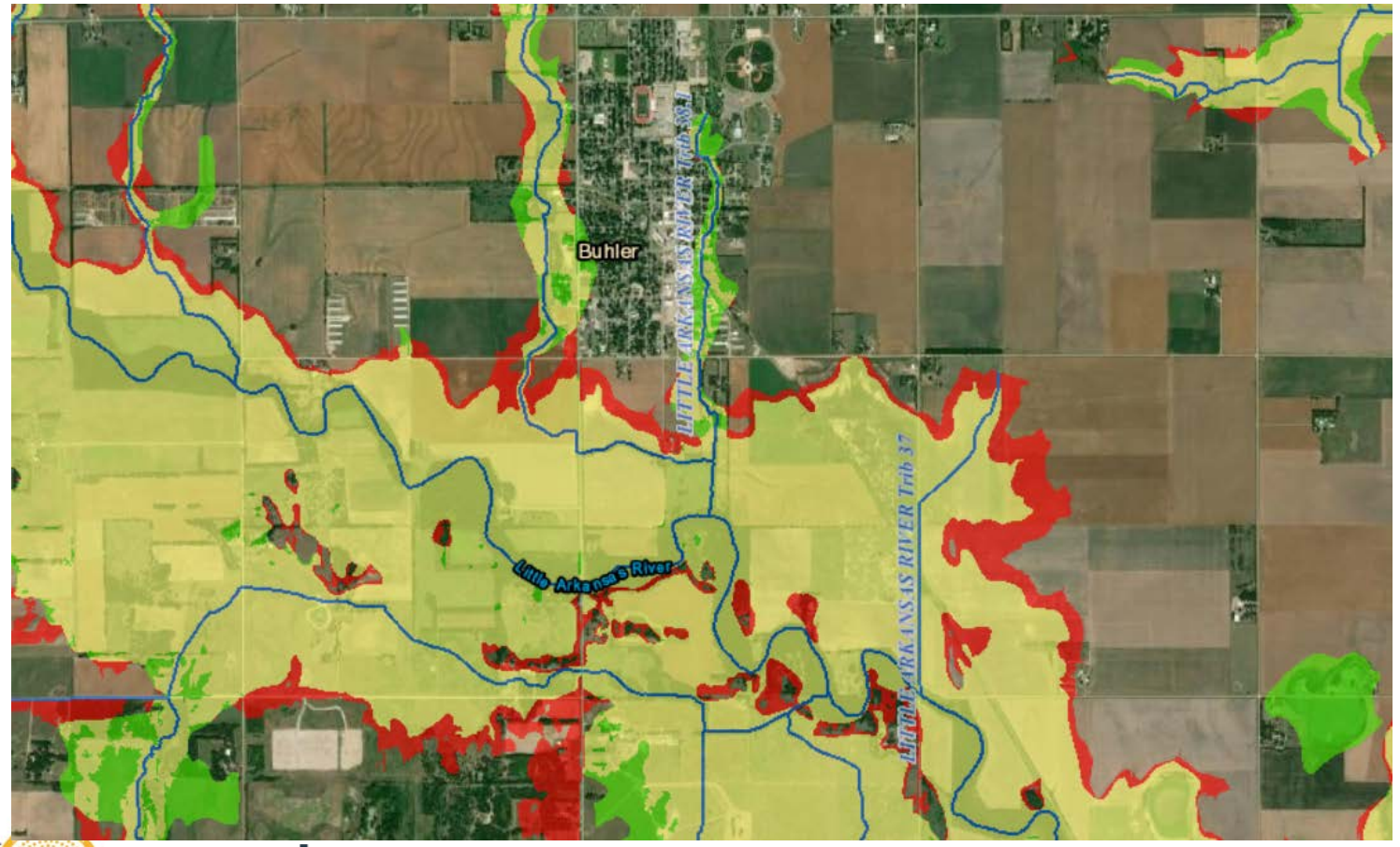

**Yellow:** Same

**Red:**
New SFHA

**Green:**
Removed SFHA

# Draft Floodplains & Changes Since Last Flood Insurance Rate Map (FIRM)

## Buhler and Reno County BLE Floodplain compared to current effective




**Yellow:** Same

**Red:**
New SFHA

**Green:**
Removed SFHA

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# How We Can Help

“Mitigation Technical Assistance”

## Example Projects:

- City of Hutchinson – Mitigation Funding Study
- City of South Hutchinson – Alternatives analysis (detention, conveyance improvements, levee pump stations
- City of Hoisington – Alternatives Analysis (detention dams, conveyance improvements, buyouts, channelization, channel cleaning


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# 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.

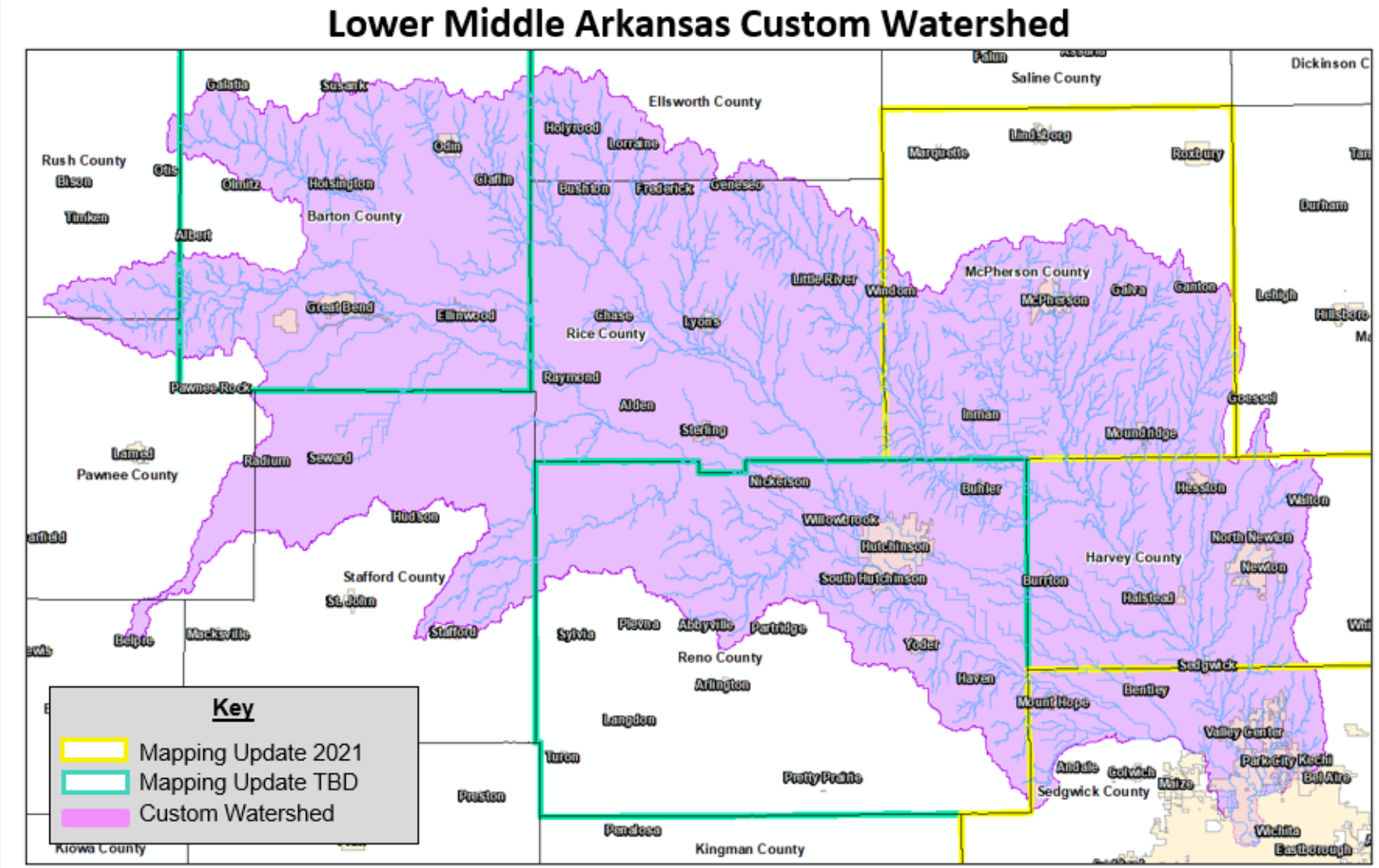

***You can visit the KDA website for more information, including a link to a fillable request form:***

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

# Preview of the Planned Work

Which We Call Our Data Development Scope

# Where We Plan to Update Your Map




**Preview of the Planned Work**

- Harvey County-
  - Update Planned for 2021
- McPherson County-
  - Update Planned for 2021
- Sedgwick County-
  - Targeted Update for certain streams of interest
  - Planned for 2021
- Reno County-
  - Targeted Update for certain streams of interest.
  - Tentatively Planned for 2022
- Barton County-
  - Update for areas not in recent map update
  - Tentatively Planned for 2022
- Other Counties-
  - TBD

# Where We Plan to Update Your Map



**Barton County 2022 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 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 AE with Floodway - Gage Analysis**

New Zone AE studies will be developed for these streams using 1D or 2D Hec-Ras hydralics and hydrology calibrated to Gage Analysis 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 - Excess Rainfall on Grid**

New Zone AE studies will be developed for these streams using 1D or 2D Hec-Ras hydraulics an "dexcess rainfall-on grid" hydrology. Floodways will not be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.

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

New Zone AH studies will be developed for these streams using2D Hec-Ras hydralics and "excess rainfall-on grid" hydrology. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.

**New Zone AH - Gage Analysis**

New Zone AH studies will be developed for these streams using2D Hec-Ras hydralics and hydrology calibrated to gage analysis flows. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.

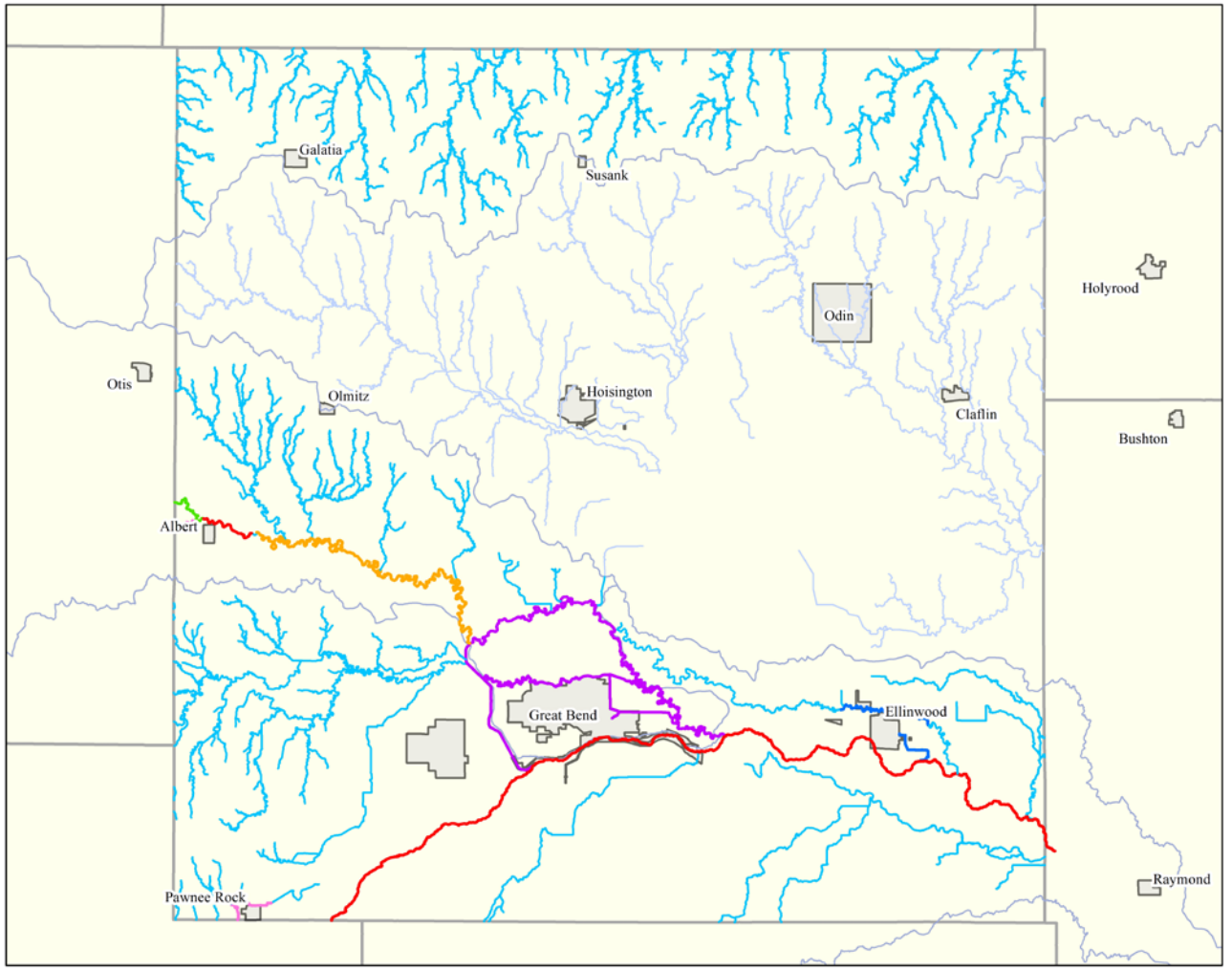
**New Enhanced Zone A - Excess Rainfall on Grid**

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.

**Incorporation of Existing Studies from Cow Watershed project**

0 3.25 6.5 13 Miles

N



# Where We Plan to Update Your Map



## Reno County 2022 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 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 AE with Floodway - Excess Rainfall on Grid**

New Zone AE studies will be developed for these streams using 1D or 2D Hec-Ras hydralics and "excess rainfall-on-grid" hydrology. 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 - Excess Rainfall on Grid**

New Zone AE studies will be developed for these streams using 2D Hec-Ras hydralics and "excess rainfall-on-grid" hydrology. Floodways will not be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.

**New Zone AE with Floodway - SWMM**

New Zone AE studies will be developed for these streams using 1D or 2D Hec-Ras hydralics and hydrology calibrated to SWMM 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 AH - SWMM**

New Zone AH studies will be developed for these streams using 2D Hec-Ras hydralics and hydrology calibrated to SWMM model flows. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.

**New Zone AH - Gage Analysis**

New Zone AH studies will be developed for these streams using 2D Hec-Ras hydralics and hydrology calibrated to gage analysis flows. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.

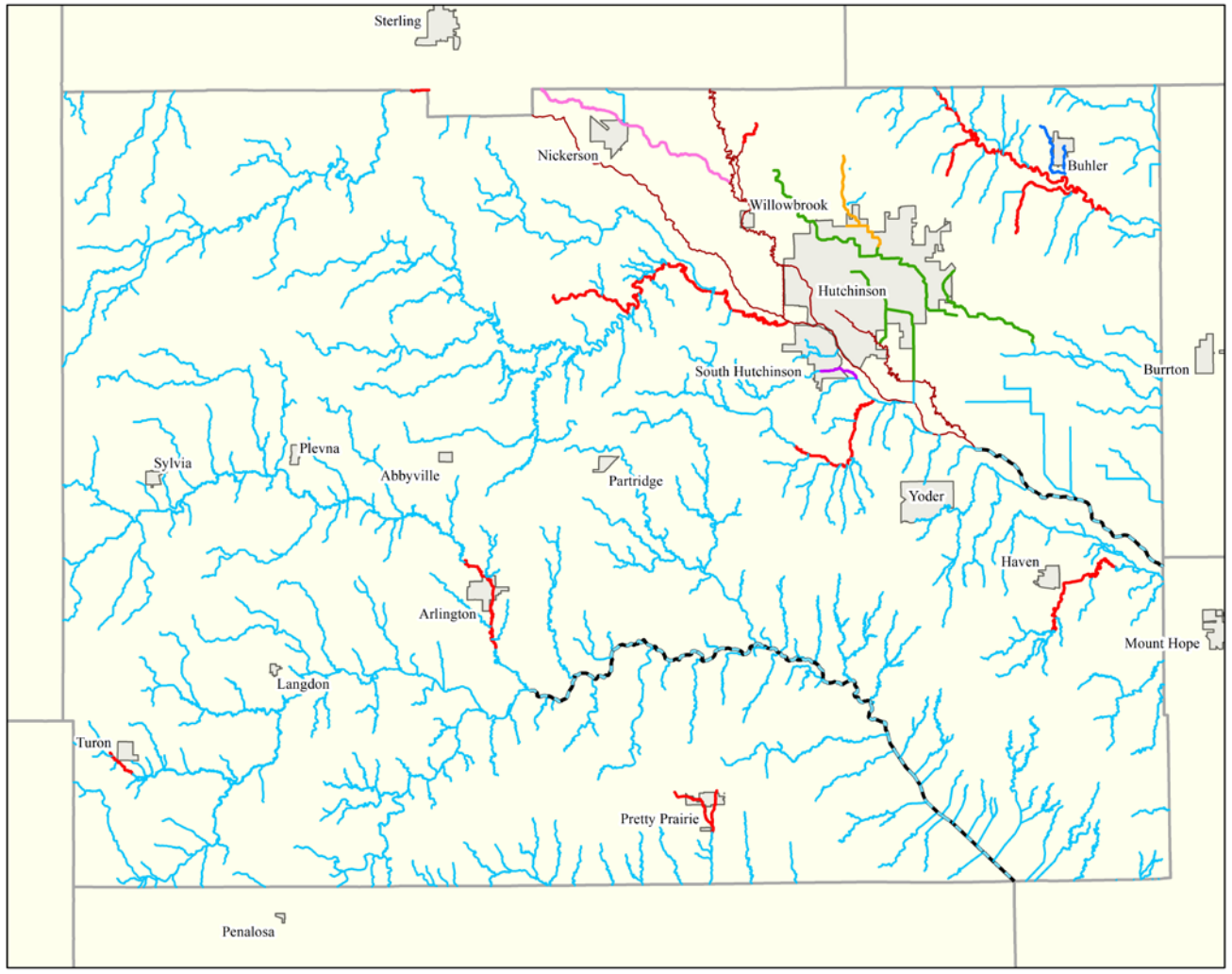
**New Enhanced Zone A - Excess Rainfall on Grid**

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.

**Incorporation of Existing Flood Studies**

0 3.5 7 14 Miles

N



# Definitions: Zone A

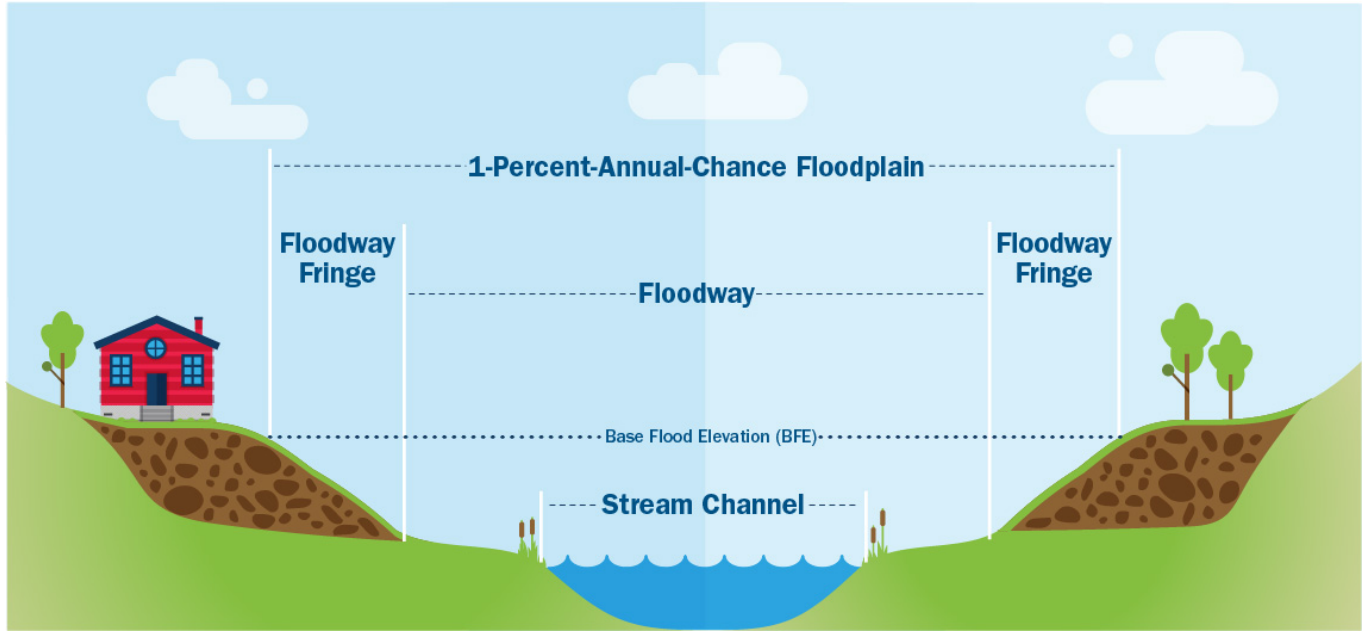
- This zone will reflect what our BLE analysis provided; not much will change
- Additional calibration to account for data that is provided
- Your FIRM will not show Base Flood Elevations (BFEs) in these zones (although you can still get them from us)
- We will provide water surface elevation and depth grids (flood risk tools to help you with outreach and planning)

# Definitions: Zone AE

- This zone has more detailed information
  - Includes Base Flood Elevations
  - Could include floodways
  - Shows the impact of culvert and bridge openings
  - We will provide water-surface elevations and depth grids (flood risk tools to help you with outreach and planning)

# 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



# Data Development Scope

- Zone AE
  - Culvert and bridge openings are included in the modeling
  - Added detail to breaklines and land cover data in the modeling
  - Additional calibration to:
    - Gage Analysis
    - Rainfall-Runoff Modeling (HEC-HMS)
    - Historical Information
  - May have a floodway
    - If there is a current floodway, it must have a floodway
    - If there is not a current floodway, a floodway is optional

# Data Development Scope

- Zone AE
  - Base Flood Elevations (BFEs) will be shown on the regulatory map
  - Floodway, if scoped, will be shown on the regulatory map
  - Water Surface Elevation and Depth Grids will be generated

# Data Development Scope

- Zone A
  - Additional Calibration to:
    - Gage Analysis for watershed
    - Rainfall-Runoff Modeling (HEC-HMS) in watershed
    - Historical Information
  - No Base Flood Elevations (BFEs) on the regulatory map, but available
  - Water Surface Elevation and Depth Grids generated

# Recap

## Goals and Your Role in the Process

# Future Project Information

- As we proceed with the planned regulatory updates, we will share the following:
  - Draft Discovery Report with all the data we gathered in preparation for this meeting
  - Next project phase of Data Development will be funded for certain counties. For Counties where Data Development is planned, this will enhance the initial floodplain, or BLE, data.
  - We will notify the Chief Executive Officers and Floodplain Managers in each jurisdiction of the modeling we will use in your community and provide a 30-day comment period (SID 620 notifications).
  - Scoping Maps are available on the project web page for your review.

# Project Timeline

**Discovery Meeting:** 1/12/2021

- *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 2/11/2021*

**Data Development Work** McPherson, Harvey, Sedgwick (Partial) Counties:

Beginning in 2021

Barton (Partial), Reno (Partial) Counties:

Estimated for 2022

Stafford, Rice, Ellsworth Counties:

None planned unless requested

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**

# 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.

**How?**

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

# STEP TWO: Review Modeling

2. 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 2/11/2021(More time can be provided if needed)
    - Comments can be received by:
        - Web Map
        - E-mail
        - Mail
        - We can provide hard copies if desired

# What Should You Do Next?

- **Provide data**
  - Provide any existing data (imagery, surveys, plans, LOMRs, high water marks, etc.).
  - Provide information on drainage studies, stormwater plans, capital improvement plans, and upcoming projects.
  - Provide any survey or as-built plan information for newly developed areas that have been elevated since the date of the LiDAR (2011-2014). We have 2018 LiDAR that is in the final production stages and we hope to be able to utilize soon.
- **Provide feedback**
  - Share any feedback you have on the draft Discovery report within 30 days of receipt
- **Talk to us about how we can help**
  - Can we help with a flood risk reduction project?
  - Should we follow up with someone else in your community?

# 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
  - Minimum of quarterly
  - When important milestones are reached
  - When action is necessary (reminders)

- Meetings
  - Five planned in-person meetings
    - Kickoff (**DONE**), Discovery Meeting (**Today!),** Flood Risk Review, Open House, Post-Preliminary CCO meeting
  - Others, as needed

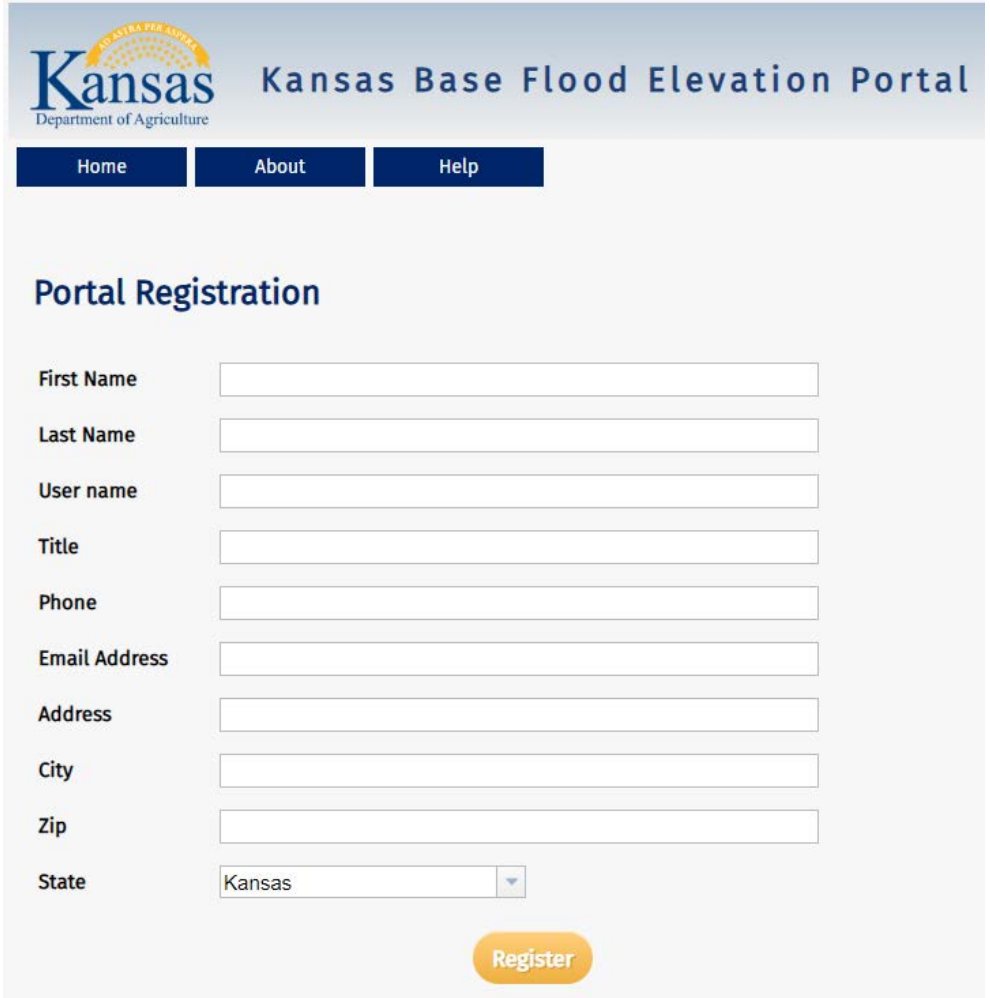
# Resources and Contact Information

# 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/lower-middle-arkansas-custom-watershed
- **Web Review Map**
  - Review of BLE data
  - https://gis2.kda.ks.gov/gis/lower_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.



# KDA Contact Information

Tara Lanzrath, CFM
Tara.Lanzrath@ks.gov
D: 785-296-2513 M: 785-276-9359
Floodplain Mapping Coordinator

Joanna Rohlf, CFM
Joanna.Rohlf@ks.gov
D: 785-296-7769
Floodplain Mapping Specialist

William Pace, CFM
William.Pace@ks.gov
D: 785-296-5440
Floodplain Mapping Specialist

Steve Samuelson, CFM
Steve.Samuelson@ks.gov
D: 785-296-4622 M: 785-221-3809
State NFIP Coordinator

# Wood Contact Information

Joe File, PE, CFM
joe.file@woodplc.com
O: 785-272-6830 M: 785-554-9108
Senior Associate / Program Manager

Maria Neeland, PE, CFM
maria.neeland@woodplc.com
D: 785-414-3127  M: 785-410-7499
Project Manager

# FEMA Contact Information

Andy Megrail, FAC-P/PM
Andy.Megrail@fema.dhs.gov
O: 816-283-7982  M: 816-807-3014
Regional Project Officer