Kansas Department of Agriculture
Division of Water Resources

FEMA

WSP

Russell County

Floodplain Mapping Project Data Development Kickoff Meeting

April 30, 2024

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!

Introductions

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Floodplain Mapping Coordinator

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Floodplain Mapping Specialist

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FEMA – Region VII

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Project Manager / Engineer

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Sr. GIS Analyst

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Today's Goals

Share details on the mapping project

Get initial feedback on modeling methods

Review future steps

Background

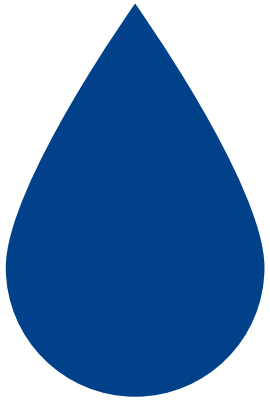
Background

It was determined that updated modeling and mapping for portions of Russell County using newer Lidar and 2D modeling techniques, would be beneficial.

- Russell County – Effective Mapping – Paper Maps
  - Dorrance- Flood Hazard Boundary Map (FHBM) 8/13/1976
  - City of Lucas – FHBM 7/2/1976
  - City of Luray – FHBM 7/2/1976
  - City of Russell – 2/1/2008 – FIRM by letter (FHBM 2/8/1974)
- Lower Solomon-Saline Custom Watershed BLE
  - Discovery Meeting held 9/17/2019
- Middle Smoky Hill Custom Watershed BLE
  - Discovery Meeting held on 3/10/2021
- Upper Solomon-Saline Custom Watershed BLE
  - Kick-Off held 6/9/22 – Discovery Meeting TBD

Review of the Work Ahead and How We Propose Doing It

Definitions



Hydrology

How Much Water?

Hydraulics

How High Will Water Get?

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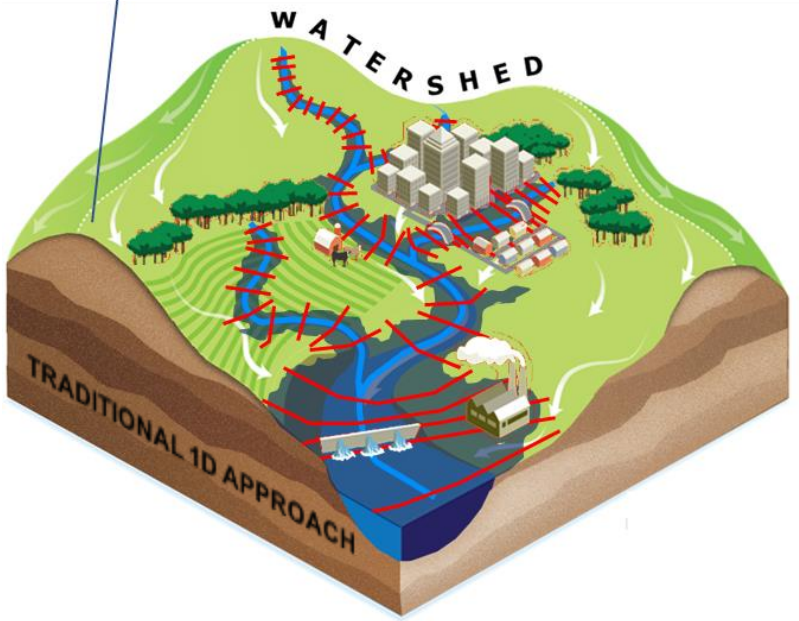
2D Modeling is being used

- Fluvial flooding only.
- Data along studied streams.
- Event-based analyses.



- Fluvial and pluvial flooding.
- Data for entire watershed.
- Probabilistic analyses.

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Model Enhancements

- Enhancements will be made to the BLE modeling that was performed.
  - Lidar, flown in 2018, will be used.
  - Comments made will be used to enhance the modeling.
  - Additional review/refinement of mesh will be done to improve accuracy of modeling.
  - Enhanced Zone A on selected streams will include field surveyed structure data, as-built survey plans, and additional land use refinements.

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Model Enhancements

- The hydrology is built into the RAS modeling platform using excess rain-on-mesh modeling.
- HEC-RAS calculates the excess rainfall using NRCS Curve Number methodology.
- Details added to 2D mesh as needed.
- Add detail to significant flood control dams as needed.
- Model flows will be compared to Kansas regression flows and gage (where available) for validation.

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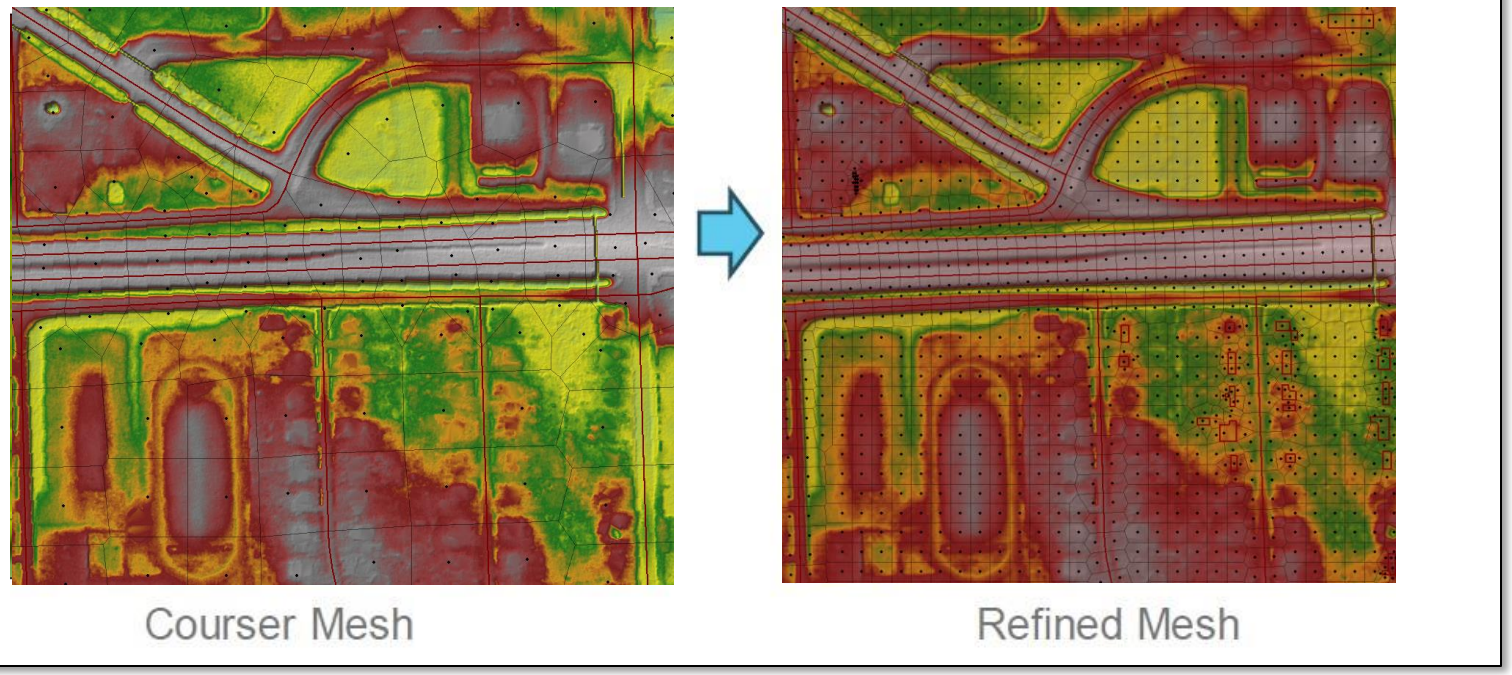
Model Enhancements

- Refined Mesh
  - Will allow for greater accuracy in flood modeling due to increased cell density



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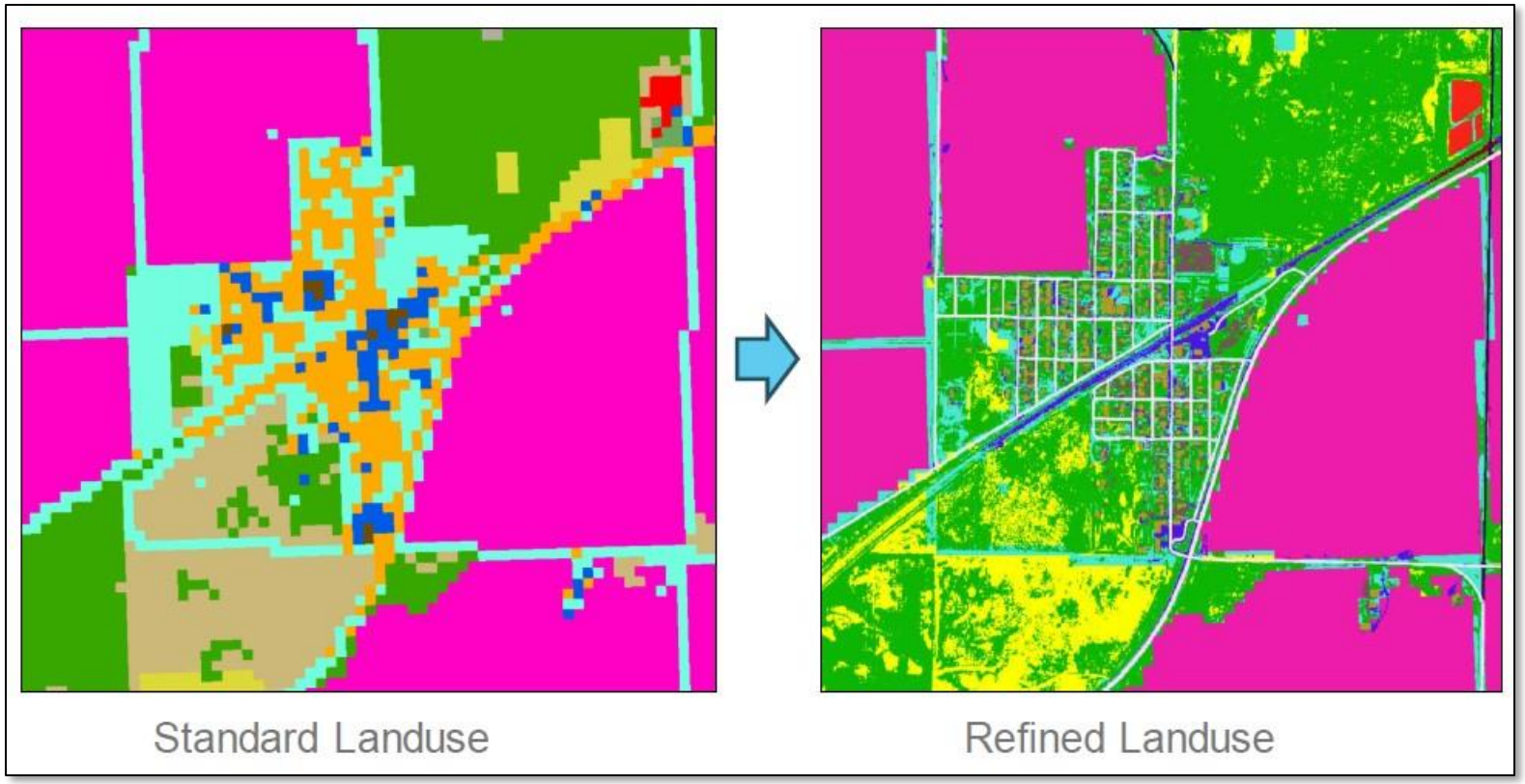
Model Enhancements

- Refined Land Use
  - Will allow for greater accuracy in surface modeling due to more detailed land use



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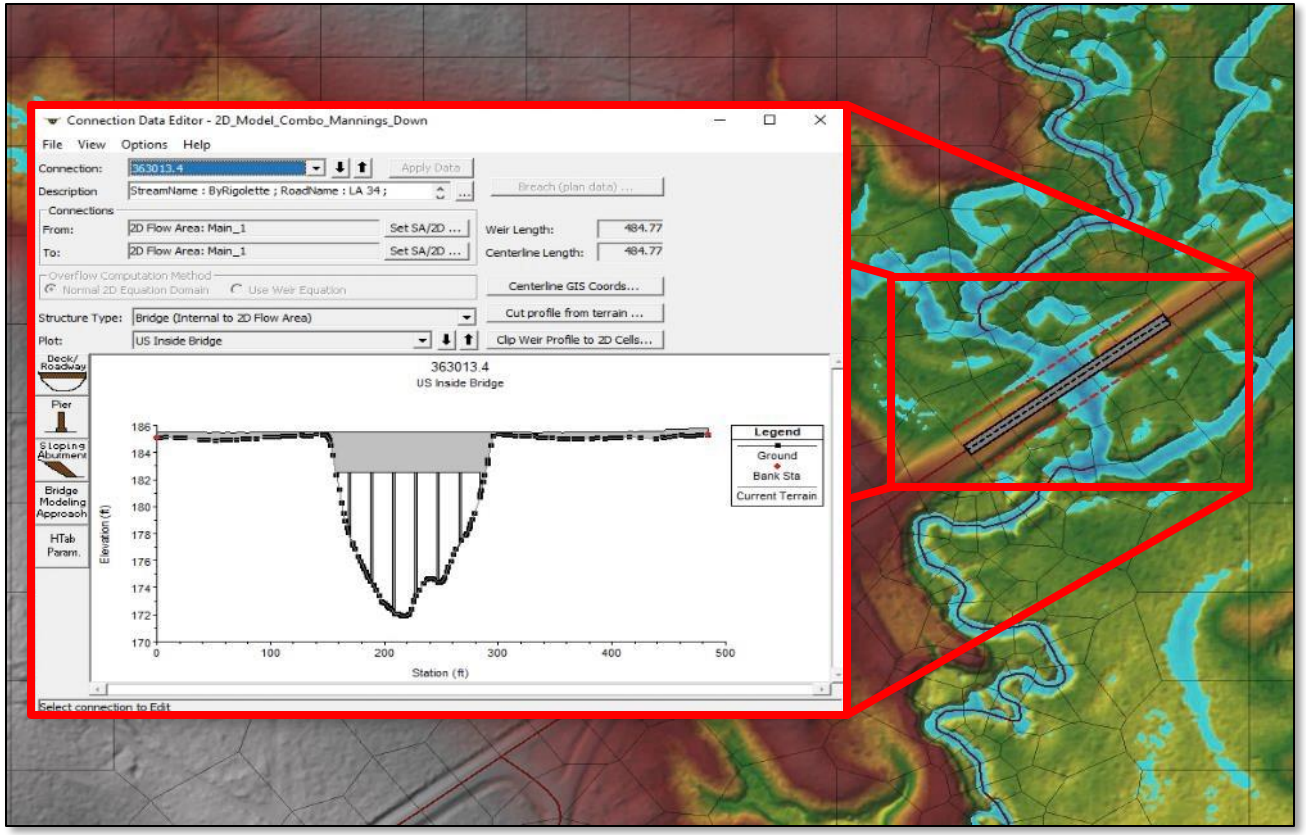
Model Enhancements

- Detailed structure modeling incorporated into Refined models, where data is available
  - Do you have any recent structure improvements, or planned improvements, that has data that can be shared?
  - Field collected structure data, if necessary



Data Development Scope

Russell County 2023 Proposed Mapping Updates

Scoped Studies

New Zone A - Excess Rainfall on Grid

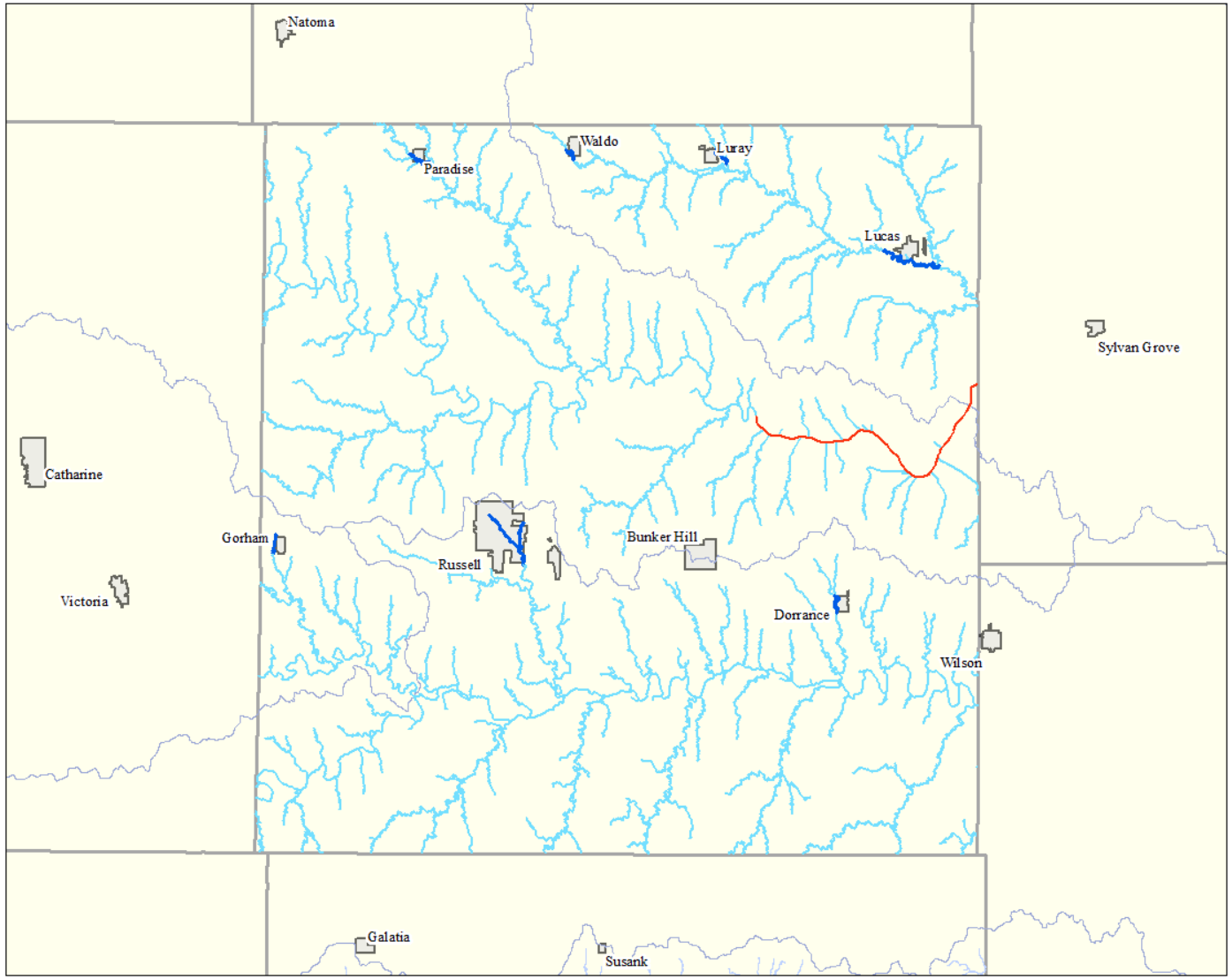
New Zone A studies will be developed for these streams using 2D "excess rainfall-on grid" hydrology and 2D Hec-Ras hydraulics.

New Static Zone AE

New Static Zone AE studies will be developed for these streams using statistiacl frequency analysis.

New Enhanced Zone A - Excess Rainfall on Grid

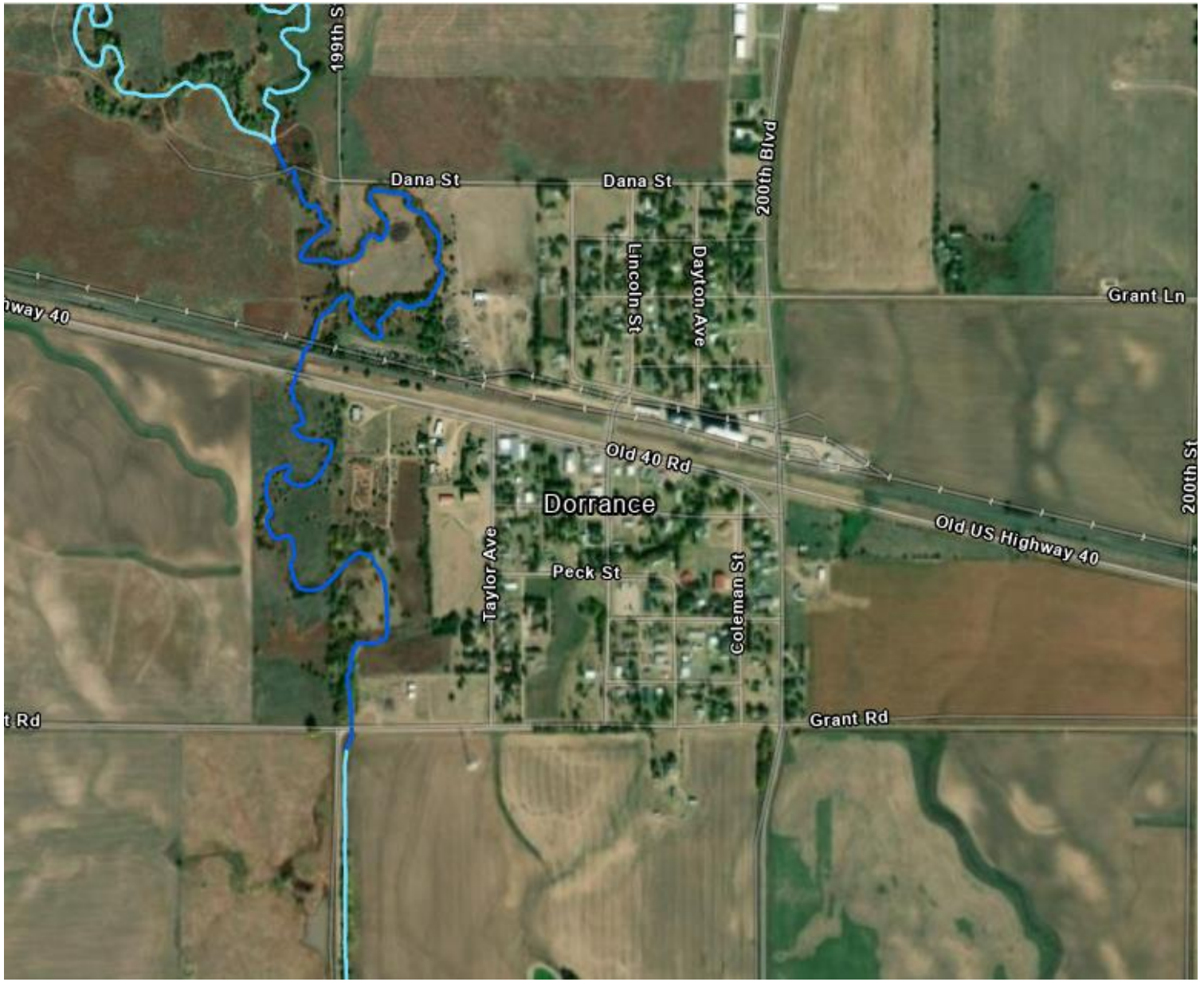
New Enhanced Zone A studies will be developed for these streams using 2D "excess rainfall-on grid" hydrology and 2D Hec-Ras hydraulics. Field measured structure data will be incorporated into the modeling.



0 4 8 16 Miles N

Dorrance

New Enhanced Zone A



Gorham

New Enhanced Zone A

Lucas

New Enhanced Zone A

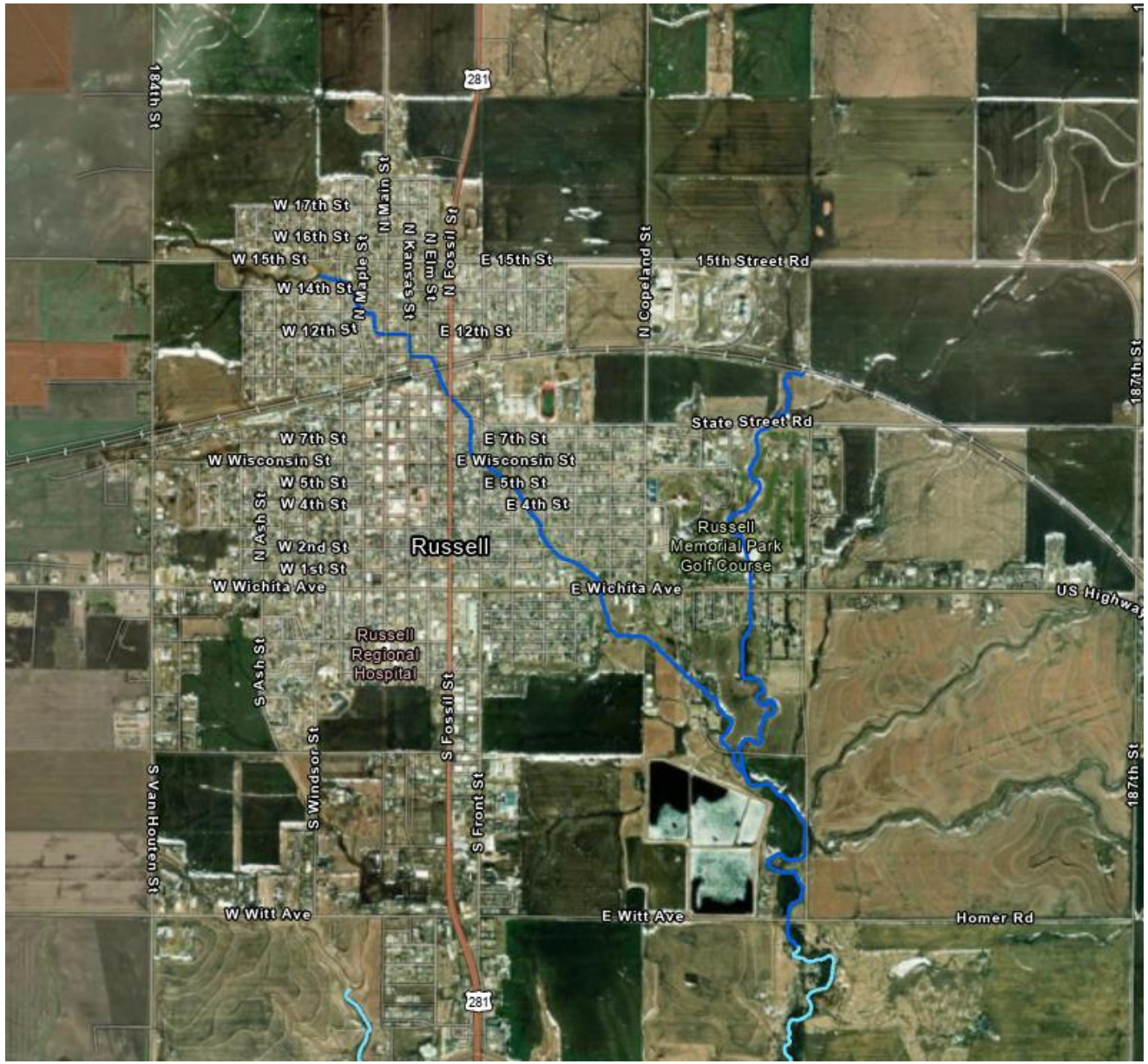
Luray

New Enhanced Zone A

Paradise

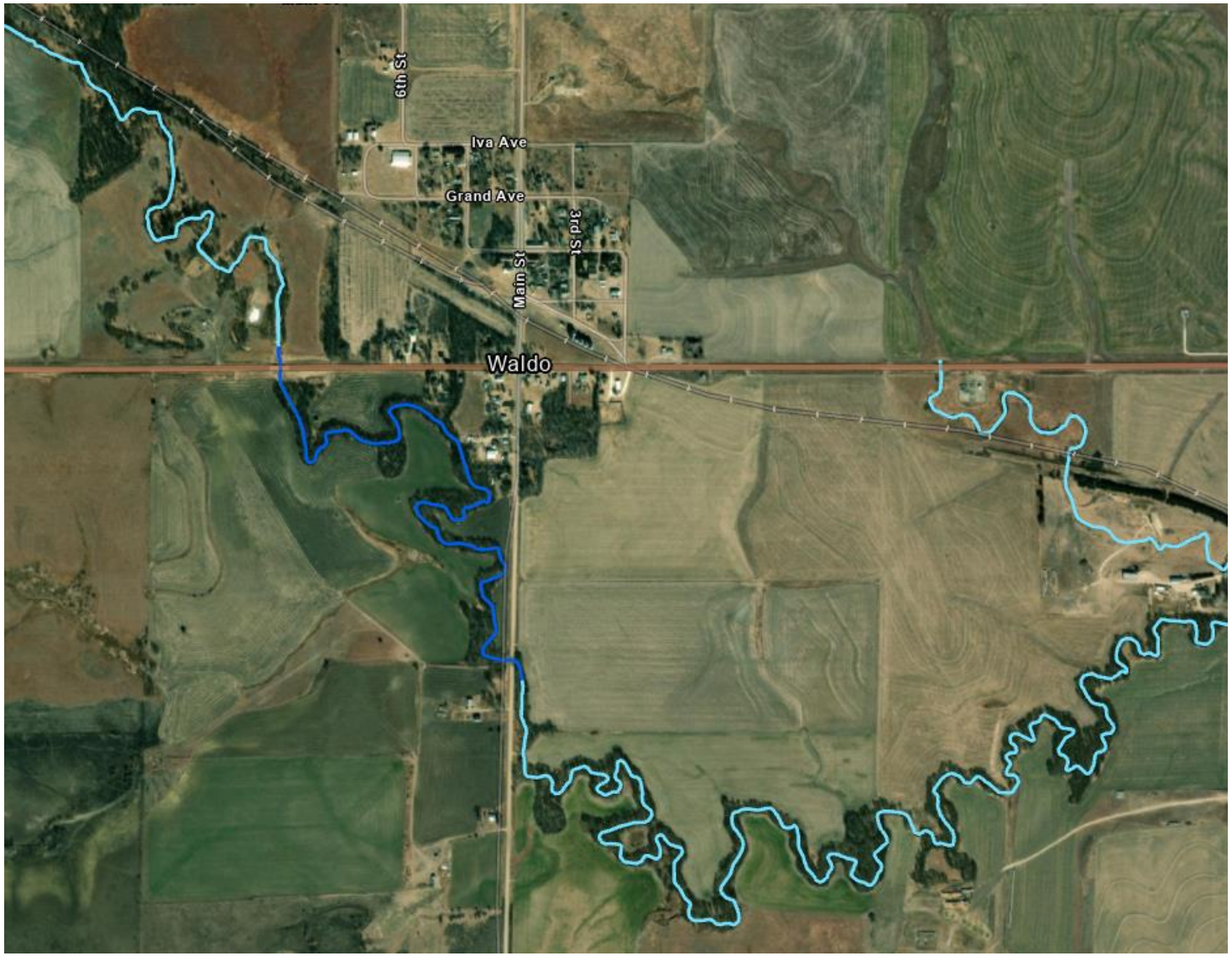
New Enhanced Zone A

Russell



New Enhanced Zone A

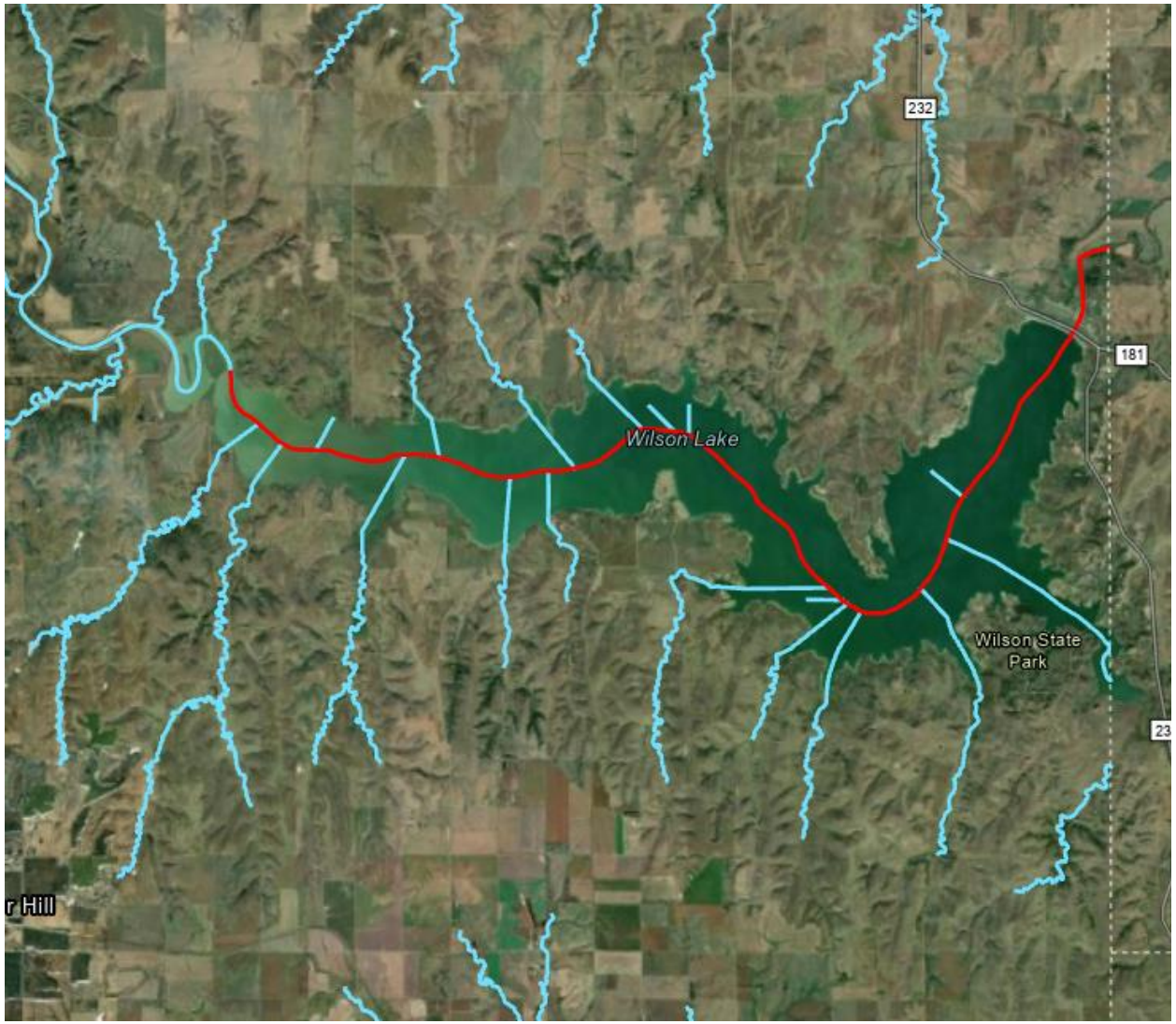
Waldo



New Enhanced Zone A

Wilson Lake

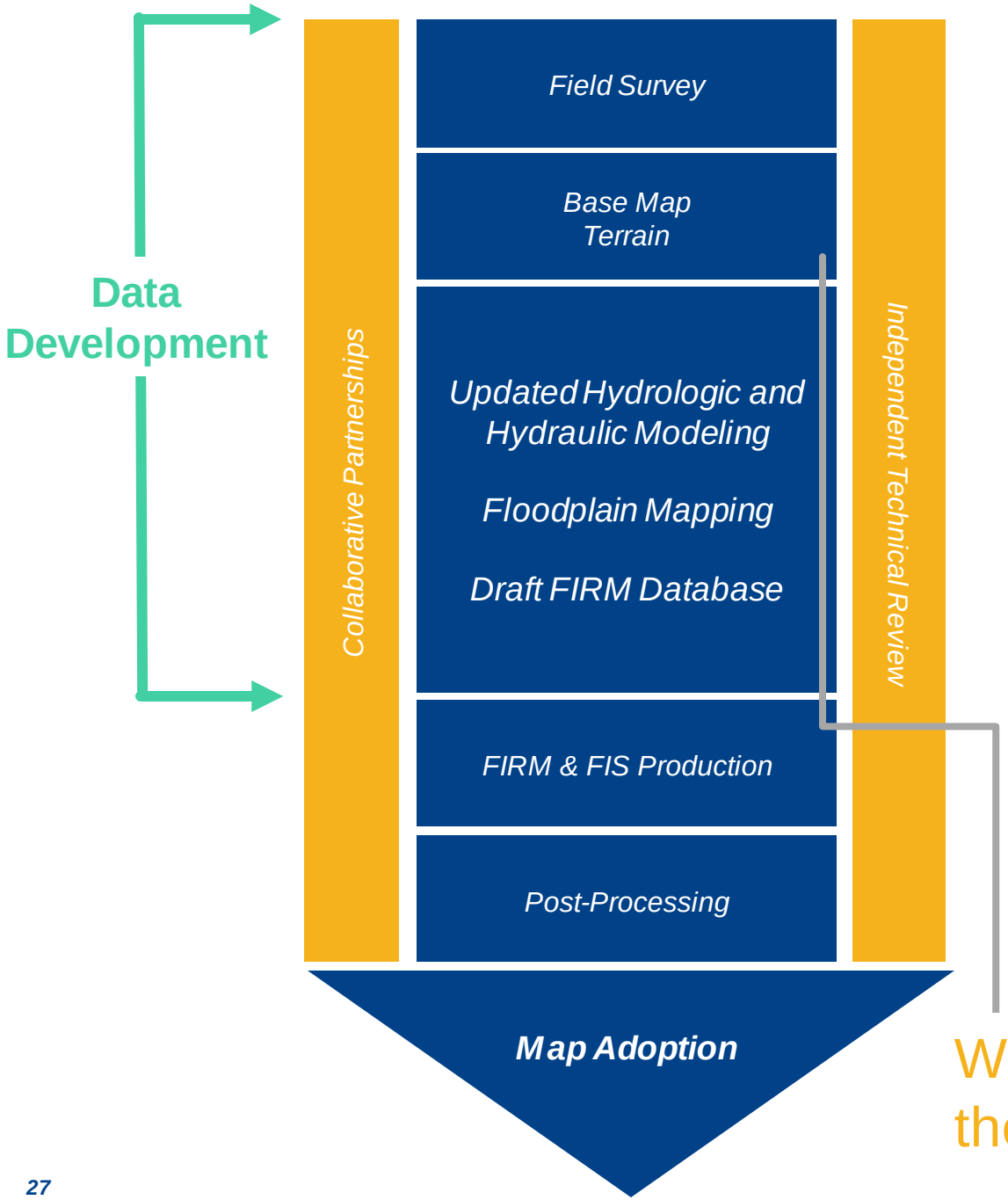
New Static Zone AE



Levees

- No levees are shown in the National Levee Database
- Agricultural levees will not be shown as providing protection from the1-percent annual chance storm

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

Our Next Steps:

- We will complete the engineering analysis previously described.
- Several rounds of reviews will be completed.
- 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

Our Next Steps:

We will also be developing flood risk products for the studied areas in Russell County as part of this project.

**Data and tools that can help you plan for ways to reduce your community's flood risk.*

Water Surface Elevation Grids

Water Depth Grids

Project Timeline

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

Data Development Work: [Now until Spring 2025]

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

Flood Risk Review Meeting:

[~April 2025]

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

Project Timeline, continued

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

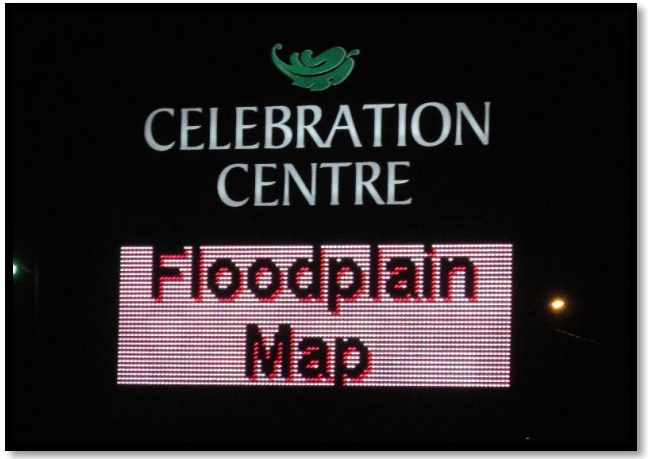
Public review of the draft maps

- *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://agriculture.ks.gov/divisions-programs/dwr/floodplain/mapping/mapping-projects/lists/mapping-projects/upper-kansas-custom-watershed

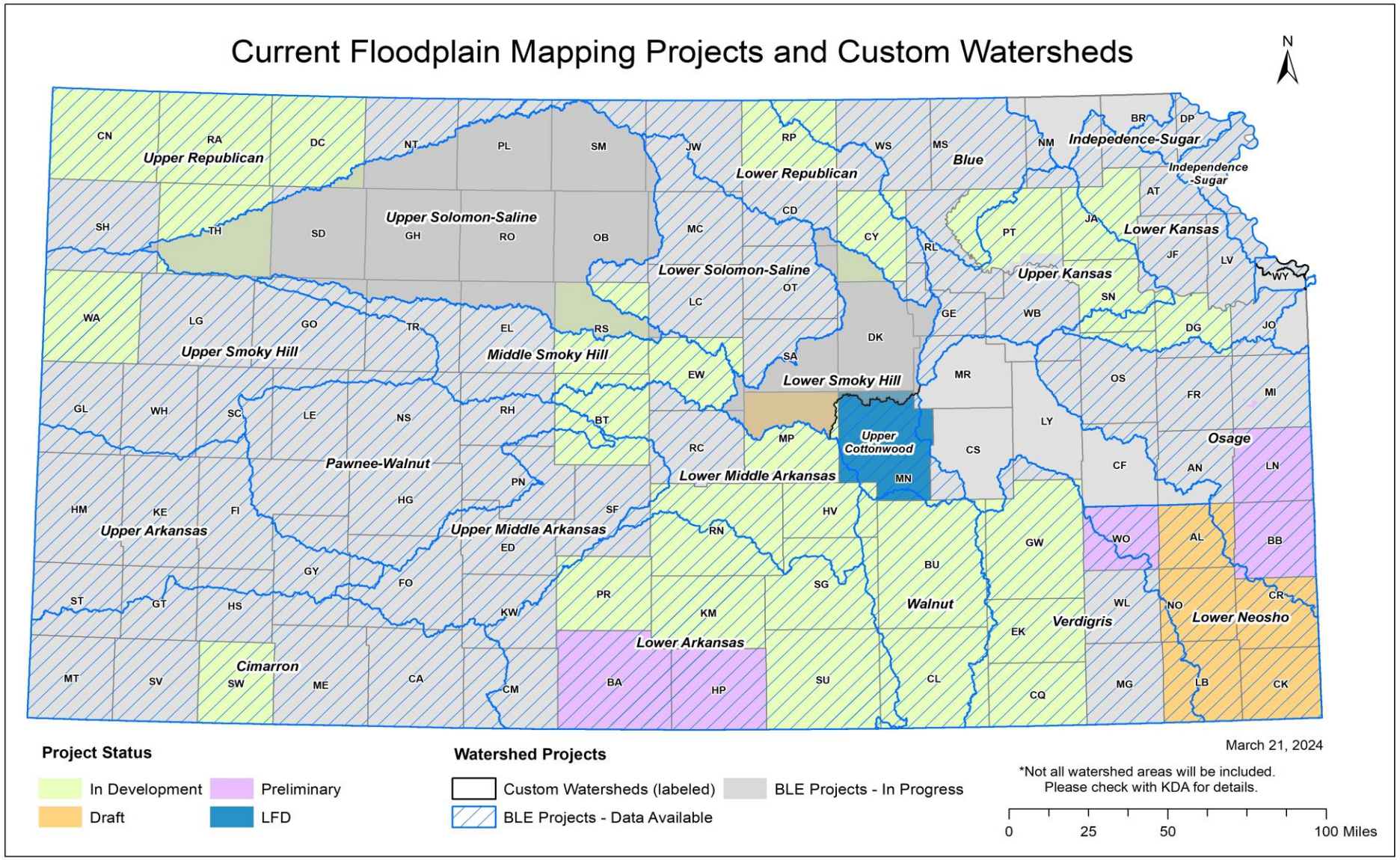
Web Review Map: https://gis2.kda.ks.gov/gis/russell/

- 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’

We are doing similar work across Kansas…




Any Questions?

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Contacts

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